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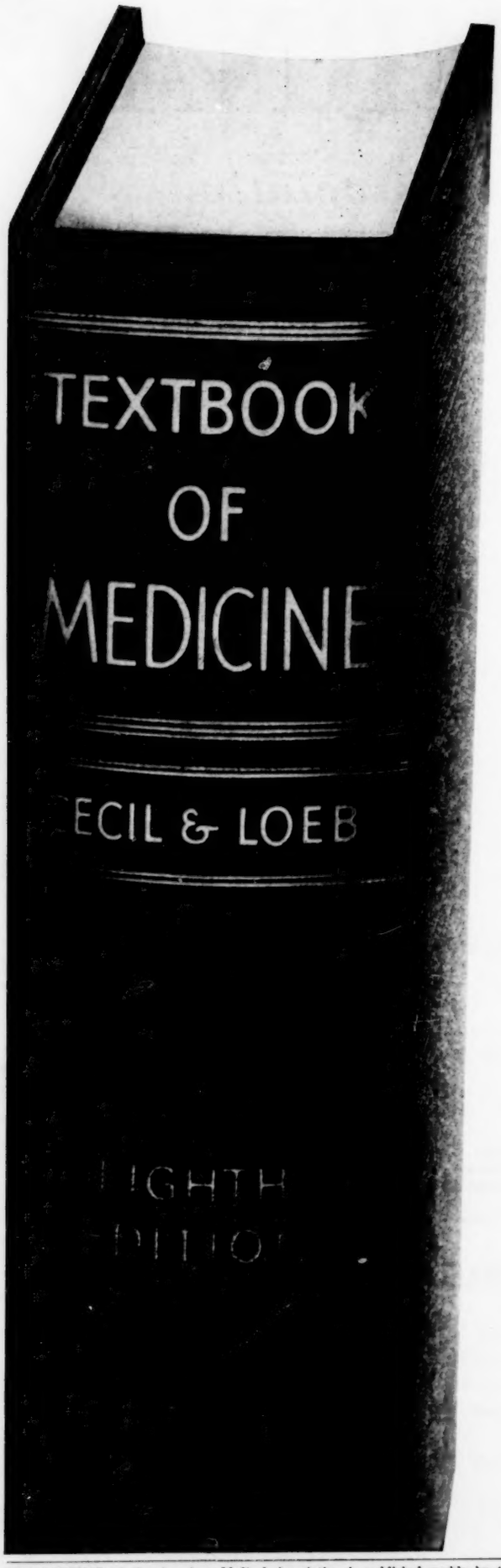

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FUTURE OF OPHTHALMOLOGY

CHAIRMAN'S ADDRESS

Robert J. Masters, M.D., Indianapolis

In these days of political, diplomatic, and economic confusion, when the future is uncertain and unpromising for the world, our country, and all of us as individuals, it is pleasant to contemplate the future of ophthalmology. There are many quite substantial reasons to believe that the future of medicine and ophthalmology is filled with the promise of advancement, in spite of the uncertain and discouraging present general outlook. These substantial reasons for the anticipated good future of ophthalmology are based on the firm foundation of accomplishment which was built for us in the past and the imposing superstructure of advancement which has been erected during the present generation. The foundation has proved strong enough and the more recently developed superstructure is surely built well enough for the two of them to support even greater heights of building in the time to come.

The past history of ophthalmology, which reaches back into the distant centuries, is romantically interesting. Surgery for the cure of blindness due to cataract was performed for centuries before the anatomic nature of cataract was known to the operating surgeon. Celcus, whose life began in 25 B.C. and ended in 50 A.D., is a good representative of the ancient ophthalmic surgeon. His writings included descriptions of the surgical treatment of chalazion, pterygium, lacrimal abscess, and eyelid deformities, in addition to cataract. His discussions of surgical treatment, like those of the other ancient writers, are impressive even today because of their unmistakable expression of meticulous care in the preoperative preparation and postoperative treatment of the patient, as well as in surgical procedure itself. Furthermore, although we moderns may be inclined to tolerant amusement when we read about some of the therapeutic agents employed by those ancient physicians, the fact remains that they were doing the best they could with what they had available. Their methods were built on a combination of superstition tempered by intelligence and scanty knowledge augmented by serious, conscientious, painstaking effort. We should honor them for what they accomplished with what they had to work with and wonder if we are doing as proportionately well today as they did then. They laid at least a few stones in the foundation of our own future for ophthalmology, even though this foundation was substantially completed in the more recent past.

The recent past of our specialty began 100 years ago, with the development of the ophthalmoscope by Hermann Ludwig von Helmholtz. The modesty of this great man was impressive in his announcement of his great gift to ophthalmology in a short, carefully worded treatise which he simply titled "Beschreibung eines Augenspiegels" ("The Description of an Eye Mirror"). Most ophthalmologists consider the ophthalmoscope the greatest single gift to the armamentarium of their specialty, and it is inspiring to think about the clinical findings and reports which fairly tumbled over one another into the literature during the first 10 years after 1851. Von Helmholtz's forecast of the clinical promise of his "eye mirror" proved to be modest indeed, since the study of opacities in the media and pathological changes in the eyeground revealed in the living eye a vast number of pathological changes which had previously been only occasionally seen under the microscope in the laboratory. Bowman of England, Donders of Holland, and von Graefe of Germany, that brilliant triumvirate of young ophthalmologists whose lifelong friendship began in 1851, were among the first to accept the ophthalmoscope and record their clinical findings with it. But the acceptance of this great advance in diagnostic procedure was not immediately universal.

Sir William Mackenzie of Scotland was one of the great clinicians and teachers in 1851. For many years his "Practical Treatise on the Diseases of the Eye" had been a textbook of note. His chapters on retinitis, choroiditis, optic nerve involvements, and melanosis of the globe were beautifully written and impress the present-day reader with their comprehensive discussion of the symptoms, general physical relationships, and microscopic pathology. But without benefit of ophthalmoscopic pictures, they were pitifully lacking. Yet, in spite of this deficiency, which he must have realized more keenly than

Read before the Section on Ophthalmology at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 14, 1951.

J.A.M.A.

many of his contemporaries, Mackenzie did not immediately use the new "eye mirror."

It is not certain why Mackenzie, as well as an appreciable number of his colleagues, failed to promptly use the new instrument. One reason may have been that he feared damage to the retina from concentrating rays of light on it. On the other hand, he may have simply been a conservative, cautious about falling in line with new ideas until they had proved worthy. In 1711, a little more than a century before Mackenzie's time, the great English poet Alexander Pope wrote his masterful "Essay on Criticism." Among other notable phrases, it contained these two: "Be not the first by whom the new is tried, nor yet the last to lay the old aside." Since these words are rather generally familiar today, it is probable that Mackenzie knew them also. In any event, he was not among the first by whom the new ophthalmoscope was tried. However, he was not the last to lay aside the old handicap of attempted clinical examination without the aid offered by the new instrument, since it was he who first described the papilloretinitis of Bright's disease in 1859. Although he was cautious and conservative (he was 60 in 1851), his greatness was proved by his not too tardy acceptance of the new instrument.

Pope's admonition apparently has mixed merit. Conservative men are needed to temper the enthusiasm and balance the activity of those who try the new, but if we did not have the latter there would be nothing new. The research workers, who are constantly exploring new fields of knowledge and the clinicians who have the courage to carefully and sagaciously try new therapeutic agents and surgical procedures are essential to our progress.

In addition to the ophthalmoscope, instruments produced during the earlier half of the past 100 years were those which made it possible to study visual acuity and central and peripheral visual fields and to estimate intraocular pressure by reasonably accurate measurement of ocular tension. These instruments also came to us from our colleagues overseas. The first clinically practical arc perimeter was contributed by Richard Förster in 1857. Albrecht von Graefe introduced a wooden tangent screen in 1855, although the use of this type of instrument did not receive much attention until Bjerrum developed and popularized his cloth screen in 1889. Heinrich Küchler described the first test types in 1843, the same year in which the trial case of lenses was invented by a general practitioner named Fronmüller. Küchler's types were employed only for testing the near vision. Jaeger published a complete collection of test types in 1854, and in 1855 Stellwag von Carion was first to state on his test card the distance at which each row of letters should be seen by a normal eye. Then in 1862 Herman Snellen of Holland devised the first scientific standardization of test types and central visual acuity. The impression tonometer of Hjalmar August Schiötz was developed (and proved more satisfactory than others) during the first quarter of the present century.

It is not the purpose of this paper to elaborate on the progress which began 100 years ago. Frederick H. Verhoeff's excellent address, titled "American Ophthalmology During the Past Century" and delivered before the Section on Ophthalmology in 1947, has thoroughly covered all the important developments of this period. But some of the developments of the past century must be mentioned. The establishment of special chairs for ophthalmology, with the first professorship that of Elkanah Williams at Miami Medical College in 1860, forecast the improved teaching of ophthalmology during the latter half of the 19th century. Also helpful in the educational program was the writing or editing of textbooks by H. W. Williams of Boston, Henry D. Noyes and John E. Weeks of New York, G. E. de Schweinitz and Norris and Oliver of Philadelphia, Casey A. Wood of Chicago, and Edward Jackson of Denver. Supplementing the educational service of the textbooks, several ophthalmic journals were founded during the late 19th and early 20th century. Some of these were rather short-lived; others continued their publication for 25 to 30 years. It can be confidently said that each one of them served a purpose in furthering ophthalmic education by publishing reports of new developments and reviews of established information, with some of the latter accompanied by case reports.

The exchange of information was also encouraged by the organization of special societies. The American Ophthalmological Society, first called the American Ophthalmological Association, held its first meeting at the New York Eye Infirmary on June 7 and 8, 1864. It thus became the first special medical society in our country. The serious purpose of its founding group was indicated by their appointment of Dr. B. Joy Jeffries of Boston to report at the second meeting on the progress of ophthalmology and the appointment of a committee to decide on a suitable subject for discussion at the ensuing meeting. A section for ophthalmology, otology, and rhinology was established by the American Medical Association in 1878, and 10 years later our own special Section on Ophthalmology came into existence. The American Academy of Ophthalmology and Otolaryngology, called by its present name since 1903, was first organized in 1896 and has for many years enjoyed an increasing reputation for its educational activities. Although organized more recently, within our own generation, The Association for Research in Ophthalmology should be included here among the great national societies devoted to our specialty. Founded in 1929, through the pleasantly persistent efforts of Conrad Berens of New York, its importance has steadily increased. There is no doubt that its sessions, held jointly with those of our Section this year for the first time, thoroughly impressed everyone present and assured the Association for Research of an immediate growth in its membership.

The science of bacteriology was founded by Louis Pasteur and Robert Koch, with Pasteur pioneering the modern theory of preventive inoculation and Koch developing the correct theory of specific infectious diseases. With Robert Koch our own American ophthalmologist, John E. Weeks, became co-discoverer of the Koch-Weeks bacillus. The microscope which Dr. Weeks used for this important work now occupies a place of honor in the living room of his nephew, Dr. Carroll Weeks of Los Angeles, who is also an ophthalmologist. The work of Pasteur was practically applied by Lord Joseph Lister when he introduced surgical antisepsis, from which surgical asepsis soon developed. The principles of Listerism were adopted by the ophthalmologists in their surgical procedures and in the treatment of ocular infections, with

the result that many antiseptics were developed and given trial. Most of these have been long since discarded, but some of the earliest of them are still in fairly general use. A good example of the latter group is bichloride of mercury, which was one of the earliest antiseptic agents employed by Lister and is still in general use in White's ophthalmic ointment.

Ranking even higher than antiseptics, among the therapeutic agents which were developed in the 19th century, were general and local anesthetics. Dr. Crawford Williamson Long of Georgia first used ether as a general anesthetic in March, 1842, but made no report of his first or later experience with it. William Thomas Green Morton, a dentist of Hartford, Connecticut, first used chloric ether and then sulphuric ether in 1844, having first had some experience with nitrous oxide gas. The discovery of ether anesthesia was formally announced in a paper written by Henry J. Bigelow and published in the *Boston Medical and Surgical Journal* on Nov. 18, 1846. Because Morton had made known his experiences with ether anesthesia and had promptly carried its use into the surgery of Massachusetts General Hospital, he has received the credit for discovering ether anesthesia, which is still the safest known form of general anesthesia.

Although general anesthesia provided revolutionary aid to the patient and surgeon for all types of general surgery and for some ophthalmic operations, much greater benefit came to eye surgery from Carl Koller's introduction of cocaine as a local anesthetic in 1884. Cocaine was discovered 29 years before by Gaedcke, with subsequent studies of its properties by several independent investigators, but it remained for Koller, an American then studying in Vienna, to clarify its practical application. It was immediately adopted by ophthalmic surgeons everywhere, applied topically and by subconjunctival and retrobulbar injection. Ophthalmic surgery thus came into a new era of progress, replacing the old days of horrifying experience for both the patient and surgeon, when operations had been performed without benefit of anesthesia and with only opium or alcohol to generally numb the poor patient's senses.

There is a chapter on cataract operation in the 1833 American edition of William Mackenzie's textbook, in which the author carefully described the stations to be taken by several assistants, one of whom held the patient's head in firmly fixed position, while others held the arms. The assistant at the patient's head used two fingers to elevate the upper eyelid, leaving the finger tips free to touch the globe and "scare" it back into downward rotation in case it should roll upward during the course of the operation. All of us who have experienced the pain produced by a foreign body under the upper eyelid must shudder in wonder when we think of what the patient and surgeon went through in those preanesthetic days. In contrast to this, I and many of the other older physicians have quite satisfactorily, and with a minimum of discomfort to the patient, performed many cataract operations with no anesthesia excepting that provided by five or six instillations of 4% cocaine solution.

Most of the surgeons in the early days of cocaine were satisfied to employ the drug by topical application, but some of them injected it in small quantities and moderate strength, even before suprarenal extract mixed with cocaine made the injection safer. Some tragedies resulted from cocaine poisoning. Then procaine hydrochloride (novocaine®) was introduced by Alfred Einhorn in 1905, and a safe anesthetic for injection had completely removed the horror of painful eye surgery. As time has passed we have learned that any local anesthetic which is effective by topical application is too toxic to inject and that, conversely, any anesthetic which is safe to inject will not be effective by topical application.

As would be naturally expected, the advent of satisfactory anesthesia was immediately followed by rapid advances in ophthalmic surgery. Improvements in the old procedures and development of new ones changed the status of eye surgery to a modern standard, and its progress has been uninterrupted ever since. It would be well for self-satisfied present-day surgeons to study this period of progress during the half century which preceded the present generation. They would be profoundly impressed by the accomplishments of their predecessors, and they would be more modest about their own. In his 1947 address before the Section on Ophthalmology, Verhoeff reminded us that Henry W. Williams of Boston employed a corneal suture in cataract operation and described it in 1866. Round pupil cataract operations were being performed by my father 50 years ago.

Therefore, as I come to a brief consideration of the accomplishments of the present generation of ophthalmologists, it will be well to briefly mention ophthalmic surgery first, and describe it with the comment that progress has continued as should have been expected. The teaching and example of the men who preceded us demanded that we improve our surgery. The improvements that have been made should have been made. They are based on constantly increasing knowledge of anatomy, physiology, and pathology; increasingly accurate employment of local anesthesia; better suture materials; improved lighting of the operative field; ingenious design of instruments; uniformly improved aseptic technique; more scientific and thorough preoperative study and preparation of the patient; constantly sustained effort to improve the surgical technique itself; and careful postoperative supervision. We must leave the evaluation of some of our current operative procedures to those who will follow us in history. However, there is no doubt that the majority of those who will immediately follow us are being much better taught how to operate than were most of us who were trained 25 to 30 years ago.

It is in the teaching of ophthalmology, especially in the training of new ophthalmologists, that this generation has made outstanding progress. Departments devoted to ophthalmology have long since become fixtures in all our medical schools. The instruction of undergraduates in the fundamentals has reached a state of uniform efficiency. One notable feature of undergraduate training has been careful instruction in the use of the ophthalmoscope as an aid in general diagnosis. This type of instruction has been carried on in most medical schools, through the cooperation of the departments of medicine and ophthalmology, for the past 15 or more years. Furthermore, one seldom finds a recently graduated general practitioner who mistakes an attack of acute congestive glaucoma for a "bilious" attack.

The greatest advance in ophthalmic teaching during this generation, however, has been in the improved training of new ophthalmologists. A few schools of medicine have organized basic courses of instruction which extend through a period corresponding to the average undergraduate year. Dr. Walter Lancaster, assisted by the late Theodore Terry and advised by a large committee of experienced teachers of ophthalmology, has done great work with the intensive three-month course of the Ophthalmological Study Council. Dr. Lancaster recently resigned from the direction of this course and has been succeeded by Parker Heath, another teacher of extensive experience. But the most encouraging teaching development has consisted of the postgraduate training provided by hospital residencies.

Counseling with one another, benefiting by the teaching experience of their colleagues, and aided by the hard work of their departmental staff members, the department chairmen of almost all schools of medicine have been able to set up satisfactory residency training programs. Some of these residencies are longer than others, some are older and better organized than others, and some are manned by more brilliant teachers than others, but that most of them are giving adequate training is indicated by the showing of their trainees when they appear for examination by the American Board of Ophthalmology. There is no doubt that the average training of an ophthalmologist today is inestimably better than the average training 25 years ago, and there is every indication that it is continuing to get even better, with the American Board of Ophthalmology undoubtedly an important stimulating factor in this improvement. Ideally, the teaching department of ophthalmology should be associated with a medical center and its hospitals, thus giving opportunity for reciprocal consultation with the staff members of other departments, but with separated surgeries devoted to eye surgery only and with a special location assigned for eye patients in the hospital. Such an arrangement is also of great advantage in the pursuit of research, which is a rapidly growing part of the program in all our schools. Access to the departments of anatomy, physiology, biochemistry, bacteriology, and pathology is essential to the research worker, as well as to the teachers of residents in training.

The Archives of Ophthalmology, edited by Francis Heed Adler, and the *American Journal of Ophthalmology,* edited by Derrick Vail, are well known to all of us for their excellence. Along with the rapidly increasing number of well-prepared modern textbooks, they are serving in the educational program of the present generation. And the special societies are carrying on, increasing in productiveness.

The most important new instrument of this generation is the slit lamp and biomicroscope. Its brilliant slit-beam illumination, with stereoscopic vision supplied by its binocular microscope, has made clinical observation of the anterior eyeball segment comparable in efficiency with ophthalmoscopic observation of the eyeground. Both instruments give us the means to examine living tissues, normal or pathologically changed or embryologically badly developed. The binocular ophthalmoscope has helped us with its stereoscopic view of the eyeground. The Freidenwald ophthalmoscope, with sufficient illumination to give useful red-free fundus examination and with its slit illumination available for observation of the eyeground through a miotic pupil, has also been a valuable addition. The contact glass and Allen prism have permitted visualization of the anterior chamber angle, adding this hitherto invisible area to the structures of the eye that are available for clinical study.

New therapeutic agents have changed entirely the management and prognosis of ocular disease, injury, and postsurgical complication. Insulin, liver extract, antibiotics, vitamins, hormones, and improved antiseptics are all too well known to require lengthy discussion. Despite the limitations, failures, and occasional contraindications of the use of the antibiotics and corticotropin (ACTH) and cortisone, these drugs are saving eyes as well as lives that would have been lost before their discovery. Some of them still present a very important medicoeconomic problem. A note recently went out to the department chairmen from our Medical Director at Indiana University Center calling attention to six prescriptions for these new drugs which were given by members of the resident staff to patients going home from the hospital. These prescriptions cost the hospital from $27 to $141. The letter of the Medical Director was quite gently worded, under the circumstances, but the pharmacy budget of any of our institutions can well be strained by such a pull on it. It is hoped that this item of expense may right itself as production advances, just as it did with insulin and liver extract.

No doubt many have long since wondered why so many words have been used in the preceding lengthy review of the past and present of our specialty, when the title of this paper was announced as the "Future of Ophthalmology." However, these many words have aimed to establish the premise of this paper, which is firm confidence in the good future of ophthalmology.

I have spoken of textbooks, journals, teaching departments, and ophthalmological societies, all directed toward ophthalmic education; of therapeutic agents and diagnostic and surgical instruments for improving the examination and treatment of the eye; of research that has steadily gained headway in the clinics and laboratories; and of advances in surgical treatment. All these elements of the progress of ophthalmology were the products of the efforts of men. For this reason, the names of many of these men were mentioned in this paper. Men accomplished the advances of the past, and men are producing the advances of the present. The young men of today, and those whom they in turn will train to follow them, are in charge of the future of ophthalmology.

The young men of today are more thoroughly trained as a group than were we who will be bowing out of action before long. These new men, benefiting by the training which they have received, stimulated by association and exchange of information with their colleagues at meetings, and inspired by the accomplishments of their predecessors, will take over the future of ophthalmology. The future of ophthalmology is in competent hands. Therefore, in these days of general uncertainty and confusion and lack of promise, it is pleasant to contemplate the future of ophthalmology.

23 E. Ohio St.

MALNUTRITION AND ANEMIA IN YOUNG CHILDREN

CLINICAL STUDY OF FIFTY CASES

Julian P. Price, M.D.
and
Walter More Hart, M.D., Florence, S. C.

Over the years we have seen a pronounced improvement in the general care and well-being of babies in this section of South Carolina. This improvement is consistent with that observed throughout the southern states, which is reflected by infant mortality statistics. However, we have also noted the number of malnourished and anemic children between the ages of 1 and 4 who continued to come to our office. Usually every week one or more of these youngsters would be brought in. They were not sick enough to be put to bed, nor were they well enough to romp and play as other children. They were simply tired, irritable children who were a joy neither to themselves nor to their families.

This study was instituted to determine, if possible, not only the immediate cause of this malnutrition and anemia but also the remote causes: the general environment of these children, the types of homes, the care they received during infancy, their eating habits, and the type and amount of medical care they had received. In this way we hoped to learn how this condition not only could be cured but could be prevented.

That this is not a completely thorough study we readily acknowledge; but, however, when it is realized that the study was made by two practicing pediatricians with their regular office personnel, as a part of their everyday practice, perhaps the deficiencies will be found excusable. No effort was made to secure special children for the study. They were the usual patients who are brought to a pediatrician's or general practitioner's office. Five were referred by other physicians; the others were brought by parents of their own accord; some came with appointments, many without.

METHOD OF STUDY

When quick appraisal showed that a child belonged in the group under study, a detailed history was taken by one of the nurses on a specially prepared form. If possible, and usually it was not, a specimen of urine was obtained and examined. The child then received a physical examination, and a blood study was made. The mother was requested to have a specimen of stool examined for ova. Detailed instructions for the treatment were given the mother, and the parents were requested to bring the child back to us in three weeks for further observation.

We realized that possibly other studies should be done if criticism of our study was to be avoided. We considered making routine tuberculin tests, but found that the readings of reactions by the parents were more confusing than helpful and that the family physician was not being consulted for confirmation. To secure blood for serological tests from every child would have been no simple task, and 20-odd years of practice with this type of patient had shown us the low incidence of congenital syphilis. So we adopted the procedure outlined, believing it would give us the desired information and at the same time would not entail more work than we could do in the office.

RESULTS OF STUDY

Sex and Age.—The 50 children were divided equally between boys and girls. Forty-eight were white and two were Negroes (only a small percentage of the children in our practice are Negroes). The youngest child was 13 months of age, the oldest 42 months. The distribution by age groups in months was as follows:

12-17	22
18-23	16
24-29	5
30-35	5
36-41	1
42-43	1

Family Background.—Siblings: Twenty-five of the 50 were the only children in the family. Of the remainder, 20 had older brothers or sisters and 3 had younger. Five had both older and younger siblings. The largest family encountered was one of 10 children, of which the patient was the youngest.

Father's Occupation.—The various occupations of the fathers of these children and the number in each occupation are given in the following tabulation.

Farmer	18
Laborer in industrial plant	14
Salesman	4
Railroad employee	3
Truck driver	2
Merchant	1
Clerk in store	1
Navy	1
Army	1
Auto mechanic	1
Electrician	1
Engineering assistant	1
Bookkeeper	1
Dead	1

Financial and Intellectual Status: Three of the families of these children were evidently on a near-indigent level of existence, finding it difficult to procure the type of food and care the child should have had. The families of 40 of the children appeared to be able to afford the usual necessities of food, shelter, and care but not many luxuries. Seven of the fathers seemed to be in better than average financial circumstances.

Four of the mothers gave the impression of low intellectual capacity; we used the simplest words in talking to them and wondered whether our message was actually understood. Thirty-six appeared to have had at least a grammar school, if not some high school, education. Ten of the fathers and mothers belonged to the better-

The vitamin preparations and ferrous sulfate used in this study were furnished by Eli Lilly & Company and the Smith, Kline and French Laboratories.

educated class. The ages of the parents when the children were born is shown in Table 1.

Place of Residence and Physical Environment: The children came from 26 different communities scattered through nine counties. The largest number, nine, lived in Florence and its rural environs.

Most of the children lived in frame houses, a few in brick buildings, and one in a trailer. One of the homes was heated by open fires, the rest by stoves or furnaces (21 by oil, 15 by coal, 10 by wood, and 3 by gas). Forty-six of the homes were screened, and 48 had some type of refrigeration (43 had electric refrigerators, 5 had ice boxes). There were inside toilets in 28 homes. Twenty had bathtubs and one a shower bath. The water supply of 26 families came from city mains and of 18 from deep wells, leaving only 6 who drew their water supply from surface wells.

Birth and Development.—Forty-seven of the children were born at full term, three were born three to four weeks prematurely. One was delivered by cesarean section, the others normally. No complications were reported in the mothers and no neonatal difficulties in any of the babies. All of the babies were sitting alone before they were 8 months of age. All but three were walking alone before 16 months. Of the three, two had started to walk at 16 and 24 months, respectively, and one, aged 19 months, was still unable to walk alone. The age at which the first tooth appeared ranged from 4 to 12 months. It was difficult to secure accurate data with regard to talking, since some of the mothers could not recall when the baby first began to use words, but the age varied from 9 to 18 months, except for one child, who did not start talking until 28 months of age.

TABLE 1.—*Age of Parents When Children Were Born*

Age, Yr.	Number of Parents: Fathers	Mothers
17-20	0	14
21-25	18	16
26-30	17	12
31-35	6	5
36-40	5	2
41-48	4	1

As two simple examples of cooperative learning (an act learned by the child with the encouragement and help of the parent), we selected the baby's ability to hold the bottle for himself and to feed himself with a spoon. Ten children reached the age of 1 year without having learned to hold the bottle, and six (the oldest aged 20 months) were still having the bottle held for them when we first saw them. Only five had been taught to use a spoon before 1 year of age, while nine had not acquired this ability until they were 18 months old. The usual age at which these children started feeding themselves was from 14 to 18 months.

A pacifier had been used by 26 of the children, and 8 had sucked their thumbs. One-half of the children slept in cribs by themselves, and 23 slept with a sibling or a parent. Two shared the bed with grandmothers. All but three were being fed in a high chair; these three (aged 14, 15, and 24 months) were still being fed in their mothers' laps. Forty were allowed to play in the yard, while 10 still had their activities confined to the house.

Medical Care.—The mothers of 25 (50%) of the children stated that they had taken their babies to a physician for routine examinations at regular times, usually at one to two month intervals, for the first year. The other 25 said they saw the physician when the baby was sick, but when they were asked the specific question "Who is first consulted when the baby is sick?," 10 acknowledged that someone else was called in before the physician, usually the grandmother. Parenthetically, it might be noted that many of these children lived in communities where well-baby clinics were conducted by the local health departments, but only three of the children had been taken to them.

Our questionnaire contained a specific question on home medication (drugs given by the mother or grandmother of her own accord). The following tabulation shows the drugs or preparations that had been employed:

"Castoria"	44
Milk of magnesia	37
Teething powders	22
Castor oil	9
Anthelmintic	5
Calomel	2
Quinine	2
Protoiodide of mercury	1
Syrup of pepsin	1
"Soothing syrup"	1

The tabulation shows that laxatives were the principal drugs used. Most of the mothers said the medicine was given only when the baby was constipated, which was often in these cases. One mother acknowledged that she gave milk of magnesia every night, and another stated that she administered castor oil to her baby twice a week.

Immunizations and Illnesses: The percentages of the children who had received the routine immunizations of infancy were as follows: 64% had received immunizations for pertussis; 62% for diphtheria; 58% for tetanus; and 14% for smallpox.

The diseases or conditions reported by the mothers as a part of the child's history are shown in the tabulation following, with the number of children having each disease.

Diseases or Conditions	Number of Children
Colds	48
Diarrhea	27
Bronchitis	19
Diaper rash	15
Worms	6
"Stomach worms"	5
Pinworms	1
Sore mouth	3
Whooping cough	3
Chicken pox	3
Pneumonia	3
Running ears	2
Convulsions (febrile)	2
Mumps	1
Influenza	1
Malaria	1
"Strep throat"	1
Jaundice	1
Impetigo	1
"Bad heart"	1
Epilepsy (?)	1

Nutritional History.—Milk: Seventeen of the children received no breast milk, and 13 more were weaned before they were 1 month of age, making a total of 30 (60%) who were denied the benefit of breast milk. Eleven were

nursed at the breast for six months, and three were still nursing (aged 14, 15, and 19 months) when we first saw them. When we saw them, 41 of the children were still getting their milk from a bottle (the two oldest being 39 months and 42 months old). Two others had been weaned from the bottle at 16 and 22 months of age. Adding this group to those who were still nursing the breast, we found that only three (6%) of the 50 children had been given their milk from a glass or cup before the age of 16 months. The amount of milk these children received in 24 hours ranged from 16 to 48 oz. (500 to 1,500 cc.), with the majority receiving four bottles of 8 oz. (250 cc.) each daily.

Thirty of the babies had been started on an evaporated milk formula, eight on raw or boiled cow's milk, seven on one of the evaporated milk preparations with added vitamins, and two on powdered milk. As the babies grew older some were changed from one type of milk to another; several were changed from evaporated milk to cow's milk, one from cow's milk to goat's milk, and one, in an effort to effect growth, successively from evaporated milk to powdered milk to a soybean preparation to lactic acid milk.

Foods Other Than Milk: The mothers of 43 children claimed to have started their babies on orange juice at 4 to 6 weeks of age. On further questioning, a number acknowledged that the babies did not seem to like the orange juice, and it was discontinued or given sporadically. Forty-five of the children had been given cereal, 42 fruit, 37 meat, and 45 eggs. These foods were usually started between the fourth and sixth months of life, but many parents stated that one or more of the foods was stopped because "the baby didn't like the taste."

Vitamins: Supplementary vitamins had been given to 47 (94%) of the children (cod liver oil or percomorph liver oil in 21 instances and multivitamin drops in 26). Administration of the vitamins was started between the fourth and sixth months of life. Six babies received the drops for less than a month and nine more for less than six months. The mothers of 35 babies said that they had given some vitamin preparation, with more or less regularity, up to the first birthday.

Eating Habits: In an effort to secure specific information relative to the child's eating habits, we asked each mother to tell us the exact foods the child had received the day before coming to our office. The answers were not only revealing but, in several instances, startling. The following examples illustrate a day's diet for three of these children:

Case 1, age 15 months
Breakfast—breast milk
Dinner—breast milk
Supper—breast milk

Case 15, aged 18 months
Breakfast—toast, bacon
Dinner—rice and gravy
Supper—grits and butter
Between meals —milk from a bottle

Case 49, age 14 months
Breakfast—grits, toast, coffee
Dinner—rice, macaroni, meat
Supper—crackers
Between meals—milk from a bottle

Physical Examination.—A few of the children were brought to us for some condition unrelated to their malnutrition and anemia (respiratory infection, vomiting, impetigo, or loose stools), but the majority were brought because the parents sensed that something was wrong in the child's growth or development. The specific complaints are shown in Table 2. The following abnormalities were noted by us in the course of the physical examinations:

TABLE 2.—*Specific Complaints as Presented by Parents*

Complaint	Number of Children
Won't eat	45
Weak, Tires easily	15
Restless at night, Poor sleeper	14
Nervous, Cross, Cries a lot	12
Frequent Colds	8
Constipated	7
Pale	7
Doesn't gain	3
Eats dirt, Eats rubber	3
Not walking yet	1
Gags on solid food	1

Pallor	41
Poorly developed muscles	36
Underweight	21
Rickets (clinical)	12
Sallow complexion	7
Enlarged cervical lymph nodes	4
Long hair (boys)	3
Carious teeth	2
Palpable spleen	2
Cardiac murmur (hemic or functional)	2
Fecal impaction	1

Blood Findings: Hemoglobin determinations (Haden-Hausser hemoglobinometer) were made for all the children. The lowest reading was 4.7 gm. (31%), and the highest 10.5 gm. (69%). The complete results are shown in Table 3. The average hemoglobin reading for the entire group was 8.4 gm. (55%). We considered a normal hemoglobin value for this group to be 11.5 to 12 gm. (76% to 80%).

TABLE 3.—*Results of Hemoglobin Determinations*

Hemoglobin Value, Gm.	Number of Children
...- 4.7	1
5.0- 5.5	2
5.5- 6.0	1
6.0- 6.5	2
6.5- 7.0	3
7.0- 7.5	3
7.5- 8.0	4
8.0- 8.5	2
8.5- 9.0	6
9.0- 9.5	10
9.5-10.0	9
10.0-10.5	7

In 41 instances a complete blood count (erythrocytes, leukocytes, and differential) was made. The number of erythrocytes varied from 2,530,000 to 6,000,000, but we attached significance to these counts only as they were interpreted in terms of the color index, which varied from a high of 1.2 to a low of .34. The child with the extremely low color index had supposedly been given "eight shots of liver," but no iron for his anemia, and had a red cell count of 6,000,000 with a hemoglobin value of 6.25 gm. (41%).

The following tabulation of the color indexes shows the number of children in each index range:

0.3-0.4	2
0.4-0.5	11
0.5-0.6	3
0.6-0.7	7
0.7-0.8	9
0.8-0.9	5
0.9-1.0	1
1.0-1.02	3

The erythrocytes showed moderate microcytosis and marked hypochromia in most of the cases. No malarial parasites were observed. The leukocyte counts were within normal limits in all but 10 patients, who showed leukocytosis (over 14,000). Six of these could be accounted for on the basis of concurrent infection. What caused the other four was not evident. Eosinophilia (over 4%) was present in 11 of the children. Two of these had a history of allergy, and one had proved Ascaris infestation. Of the remaining eight, four had no ova in the stool on examination and the other four had no examination.

Stools and Urine: The parents of 18 children cooperated to the extent of having stool examinations made. Three of the children were found to have intestinal parasites: ascariasis in two and uncinariasis in one. We do not know whether this percentage of infestation (17%) would have prevailed in the 32 who were not examined. The parents of 10 children brought urine specimens or collected them in the office. Nine of these specimens were normal. One child had pyuria, which cleared rapidly under treatment.

TREATMENT

Treatment consisted of the following five distinct parts, which were explained in detail to the parents. 1. Immediate weaning of the baby from the bottle or breast. Gradual weaning of a baby toward the end of the first year is desirable, but we were convinced that only abrupt weaning in this group of children would achieve the results we wanted. 2. Getting the child on a well-balanced diet, encouraging him to feed himself as much as possible. We knew that general remarks about essential food elements would accomplish little if anything, so we told the parent to try to get the child to eat the following foods: for breakfast, fruit juice, an egg, and cereal or toast; for dinner, two vegetables, rice, potato or macaroni, and meat or cheese; for supper, a fruit or vegetable, cereal or sandwiches, and a simple dessert. The child was to be offered a glass of milk along with each meal but he was not to drink it all at the first of the meal. Nothing was to be given between meals but fruit or fruit juice. 3. Giving the baby an iron-vitamin mixture regularly. The mixture we used was compounded by us in the office from the following ingredients: thiamine hydrochloride 600 mg., ferrous sulfate (feosol® elixir) 120 cc., a multivitamin preparation (homicebrin®) 120 cc. The prescribed dose was 5 cc. (one teaspoonful) three times a day. The children thus received daily 4,500 I. U. of vitamin A, 40 mg. of thiamine hydrochloride, 1.8 mg. of riboflavin, 90 mg. of ascorbic acid, 1,500 I. U. of vitamin D, and 150 mg. of ferrous sulfate.

It will be noted that the amount of vitamin A, riboflavin, ascorbic acid, and vitamin D is three times the daily vitamin requirement recommended by the Food and Nutrition Board of the National Research Council. The large amount of thiamine hydrochloride appears to be grossly excessive, but clinical experience has proved to us its value in stimulating appetite. We have also seen several cases of beriberi in malnourished children in this section of the country and are convinced that thiamine deficiency is not uncommon. The amount of ferrous sulfate is slightly above the dose usually given. In compounding the preparation we mixed the thiamine hydrochloride with the multivitamin preparation and then added the ferrous sulfate in small amounts, shaking the mixture vigorously all the while. In this way a homogeneous mixture was obtained. When the full amount of ferrous sulfate was poured in at once, a lumpy mixture resulted. 4. Examination of the stool for ova. Intestinal parasites (principally Ascaris and Necator americanus) are not uncommon in this region, and it seemed advisable to rid the children of these if we were to get the best results. 5. Further observation and blood study at the end of three weeks (when the supply of iron-vitamin mixture that we furnished was exhausted).

RESULTS OF TREATMENT

We tried to impress on each mother the necessity for further examination. Knowing that some of these children lived at quite a distance from our office and realizing the human tendency to disregard instructions, we were agreeably surprised to have 32 report back in person. Letters were sent to the others, and three replied. Another physician sent us a report on one child. This gave a total of 36 (72%) on whom we secured sufficient data to determine results.

The best-planned medical regimen is of little avail if, after it is prescribed, it is not applied. So we attempted to determine the amount of cooperation shown by the parents of these 36 children. The parents of 25 (69%) appeared to have tried to follow our instructions completely, and the parents of 10 modified them to greater or lesser degree. In the 25 instances in which treatment as outlined was followed, satisfactory results were obtained. In four of these the improvement was slow owing to intercurrent infections. In 21 the response was immediate. In three weeks the children's color had improved, their appetites had increased, they were less irritable, their bowels were moving more normally, and they slept better. The average gain in hemoglobin in this group was .54 gm. per week. The following case reports illustrate the results obtained when our instructions for treatment were followed.

REPORT OF CASES

CASE 8.—This patient was an 18-month-old white boy whose father was a merchant. He was started on milk from a bottle at 1 month and on supplementary vitamins and solid foods at the usual age. He sat up at 5 months and walked at 13 months. He had the usual immunizations. He appeared to do well up to 1 year of age, and then his appetite diminished. He relied more and more on his milk. At 18 months he was receiving 1 qt. (1,000 cc.) of milk from a bottle each day and little other food. He was brought to the office because of pallor, irritability, and poor sleeping habits.

Physical examination showed him to be slightly overweight, pale, flabby, and unfriendly. He weighed 21 lb. 15 oz. (10 kg.). Blood study showed a hemoglobin value of 9 gm. (59%) with 4,300,000 red blood cells. The treatment outlined was prescribed.

Three weeks later he appeared much happier and more lively. The hemoglobin value had risen to 10.5 gm. (70%). The mother reported that she had no difficulty stopping the bottle, that he was eating and sleeping well and playing with other children. The mother was advised to continue the treatment.

CASE 1.—This 15-month-old white boy was the son of a farmer. He was the 10th child in the family; the father was 40, the mother 39. He had been breast-fed all of his life. Vitamin drops were given for three weeks only. Grits were started at 12 months, but no other foods were given. He sat up at 6 months and walked at 12 months. He had been seen by a physician once. He was fed in his mother's lap and slept with his mother.

Physical examination showed him to be thin, small, pale, and poorly nourished. He showed parietal bossing, flaring of ribs, and enlarged epiphyses at the wrists and ankles. His hair was long. He weighed 19 lb. 4 oz. (8.7 kg.). The hemoglobin value was 9.25 gm. (61%), with 2,530,000 red blood cells. The treatment outlined was prescribed.

Three weeks later the hemoglobin value was 10.25 gm. (67%) and the child weighed 20 lb. 6 oz. (9.3 kg.). The mother reported that she had weaned him immediately without any difficulty, that he was eating general foods and drinking some milk from a cup. His disposition had improved considerably. She was advised to continue the treatment.

CASE 25.—This 16-month-old white boy had been a former patient of ours and had been brought in for monthly check-ups for the first six months, receiving the usual immunizations. At the age of 10 months he weighed 21 lb. (9.5 kg.) and appeared to be in excellent health. Toward the end of the first year he had learned to hold the bottle for himself and had gradually lost all desire for other foods. He had never learned to feed himself with a spoon. At the age of 14 months he was taken off the bottle and ate well, but he took little milk from a cup, so the bottle was started again. When he was brought in for examination at 16 months his mother stated that he was drinking five bottles of milk, 8 oz. (250 cc.) each, daily. He refused all other foods. His mother brought him in because he was constipated and irritable.

Examination showed him to be pale and quite irritable. The muscles were flabby. He weighed 22 lb. 13 oz. (10.4 kg.). The hemoglobin value was 9.5 gm. (61%). The stool was negative for parasites. The treatment outlined was prescribed.

In three weeks there had been a pronounced change, according to his mother. His appetite was good, he was eating general foods and drinking small amounts of milk from a cup. He had gained 10 oz. (280 gm.) in weight and the hemoglobin value was 10.5 gm. (69%). His mother was advised to continue treatment.

In the 10 instances in which the mother modified our suggested treatment, the results varied from poor to fairly good. The following cases illustrate the results when the prescribed treatment was modified.

CASE 17.—A 21-month-old white girl was the daughter of a salesman. She had been bottle-fed since birth with an evaporated milk formula, with one short period of receiving goat's milk. Cod liver oil was given regularly. She was started on other foods in infancy but did not like them or take them well. She had learned to hold a bottle early but had never learned to feed herself with a spoon. Her mother had wanted to stop the bottle, but her grandmother insisted that it be continued. The day before she came to the office she had received the following foods: for breakfast, small amount of cereal and bottle of milk; for dinner, bottle of milk; for supper, bottle of milk, and between meals, box of soda crackers.

Examination showed her to be pale and cross. Her skin was sallow and her muscles flabby. She appeared tired. The hemoglobin value was 9 gm. (59%) and the red blood cell count was 5,790,000. The stool was negative for ova. The treatment outlined was prescribed.

She was brought back in three weeks. The bottle had been taken away from her, but she was still allowed to eat food such as crackers between meals. The medication had been given irregularly. It was evident that more drastic steps were necessary. The child was admitted to the hospital, a blood transfusion was given, and a diet instituted. This time the family agreed to cooperate and the results were gratifying. When seen again in four months the girl was in fine spirits. Her appetite was good, and the hemoglobin value was 12.5 gm. (83%).

CASE 19.—This was a 26-month-old white girl, daughter of a sprayer for a county health department, who was brought in because of frequent colds and attacks of diarrhea. She had been bottle-fed with an evaporated milk formula. Solid foods were given at the usual age, but around 1 year of age she lost appetite for everything but milk. She had been given orange juice daily from 1 to 8 months of age, and a percomorph liver oil concentrate from the ages of 3 weeks to 2 years. The diet on the day before examination consisted of these foods: for breakfast, grits, a small amount of egg, and a bottle of milk; for dinner, banana pudding and tea; for supper, grits and gravy and a bottle of milk.

Examination showed a pale, unhappy, and irritable youngster. Her weight was 32.5 lb. (14.8 kg.). Her muscles were flabby. The hemoglobin value was 8.5 gm. (56%). The treatment outlined was prescribed.

Ten days later she was brought back with a severe upper respiratory infection. The mother stated that she had been improving until she caught cold. Aureomycin was prescribed, and the parents were urged to bring her back for further observation. She was brought back in four months. The mother stated that she had improved considerably and then had fallen back into her old habit of eating between meals and had lost her appetite. Her hemoglobin value was 8.5 gm. (56%). She was now in the pretreatment status. Again we outlined the treatment, gave some more of the iron-vitamin mixture, and urged that she be brought back in three weeks. At the time of this writing, six months later, she has not returned.

CASE 12.—The patient was a 23-month-old white boy whose father was in the Navy. He was brought in because of sores around the mouth. He had received breast milk up to 6 months, evaporated milk from a bottle up to 13 months, and then cow's milk from a glass. Cereals had been started at 3 months, meat at 7 months, fruit at 9 months, and vegetables at 13 months. No supplementary vitamins had been given. For the past few months his diet had consisted of starches, milk, occasionally meat, and almost no vegetables and fruit. When asked about immunizations, the mother replied, "He has had the three-in-one shots—whooping cough, diphtheria, intestinal."

Examination showed him to be pale, flabby, and irritable, with evidence of rickets. He weighed 26 lb. (11.8 kg.). There were impetiginous lesions around the mouth. The hemoglobin value was 9 gm. (59%), the red blood cell count was 5,100,000. The stool was negative for ova. We prescribed treatment for the impetigo and outlined the usual treatment for anemia and malnutrition.

Five days later the child was brought in again. The impetigo had cleared, but otherwise there was no change in his condition. The medication had been given sporadically, the diet had not been followed. Again we explained the different phases of the treatment to the mother and urged her cooperation. Eight months later we received a letter from a pediatrician in a neighboring city asking for this boy's record. When we wrote that he was one of our case studies and we would like a follow-up on him, this was the reply:

"When I saw this boy he was 31 months of age and the complaint at that time was 'sores on the arms and legs.' His general condition was slightly improved over his condition when first seen by you. His weight was 27.5 lb. (12.5 kg.). The stool was negative for ova. The hemoglobin was 72% (Sahli). He was on table foods, orange juice and 'hadacol'—one teaspoonful three times daily. The sores on his arms and legs were infected insect bites. My examination was otherwise negative except for the child being underweight and malnourished. I let her continue on the 'hadacol' but insisted on homicebrin®—one teaspoonful twice a day. I am afraid this mother is a bit too much for me to cope with but I will keep on trying. Thanks for the letter and the patient (not the mother)."

COMMENT

As we compared the general conditions in which these children lived and the care they received in infancy with the situation that prevailed when we started our

pediatric practice 23 years ago, we were impressed with the progress that has been made. Sterilized milk, earlier use of scientifically prepared cereals and vegetables, better refrigeration, widespread screening of houses, better heating facilities, water from city mains or deep wells instead of from the dangerous shallow wells—all of these have made their contribution to better health. The need for supplementary vitamins, not so well recognized formerly, is now an accepted fact. Vitamins had been given to 94% of these children, and 70% had received them with fair regularity during their first year. Routine immunizations, infrequently given for diphtheria and not yet developed for pertussis and tetanus in 1928, were received by over half of the children in this series.

From the evidence collected in this study, we are convinced that the babies of today in this section of the country are receiving far better medical and general care during the first months of life than they did a quarter of a century ago. This evidence also shows, however, that many still are not getting the care that is available and to which they are entitled. It became equally apparent as we studied these records that inadequate care is being given to many children during the latter part of the first year and during the second and third years of life, with resulting malnutrition and anemia. It is obvious that the immediate cause of the malnutrition and anemia is inadequate intake of foods containing iron and vitamins. These children subsisted largely on milk. Other foods, mostly carbohydrates, were taken in small amounts. The vitamins necessary for normal growth were not being received. Contributing factors were intestinal parasites, chronic infections, or repeated attacks of acute infections, particularly of the respiratory tract.

The treatment we employed in these cases of malnutrition and anemia gave satisfactory results. However, we were more concerned with the remote causes, the factors in the child's earlier life that had contributed to the development of the present poor health. As we interpreted the information secured from our study, anemia and malnutrition resulted from the following causes. 1. Misunderstanding as to the role of milk in a child's diet. It has been preached from the house tops that milk is the perfect food and that every child needs a quart a day. Milk is undoubtedly the best single food, but it is not a complete food. Many children not only do not need, but cannot take, a quart a day if they are to eat the additional foods required for normal growth and development. When we attempted to explain this to the parents, the usual reply was, "But I always thought that if a child got a quart of milk a day everything would be all right."

2. Failure to wean the baby from the breast or bottle during the last months of the first year. When a baby has learned to hold a bottle for himself, to lay it aside and pick it up at will, to carry it around with him as a toy, he tends to dawdle and to drink a portion of the milk now and a portion later. His natural appetite is dissipated. He satisfies himself with milk from the bottle, refuses other foods, and goes on his anemic way.

3. Failure to teach the child early to feed himself, to hold and drink from a cup, and to handle a spoon. When a baby is taught to drink from a cup and then taught to handle the cup, the transition from bottle to cup is relatively easy. When a sudden change is attempted without early training, difficulties ensue. If, when a baby is old enough to sit in a chair, he is allowed to feed himself, he appears to enjoy it and the eating of solid foods becomes a pleasure. If, on the other hand, a spoonful of food is constantly being thrust into his mouth, his sense of independence and individuality tends to become insulted and he refuses to participate in the one-sided game. Nowhere is it more evident than in feeding an infant that children can be led with ease but pushed with difficulty.

4. Failure to continue the administration of supplementary vitamins after the first few months of life. Although 47 of the 50 babies had been started on supplementary vitamins early, 6 received them less than a month and 9 others did not receive them after the first six months. Few of them were given supplementary vitamins during the second year of life.

5. Poor understanding on the part of the parents as to what constitutes a satisfactory diet. Many of the mothers seemed to believe all that was necessary was to fill the child's stomach; whether it was with milk, grits, or soda crackers did not seem to matter. A majority of the children seemed to be getting a sufficient number of calories, and less than half were underweight. This fact alone kept many of the parents from realizing that the children were also malnourished.

6. Lack of periodic medical examinations. The mothers of 25 children stated that they had carried the child to the physician only when he appeared sick. The other 25 had taken the child for regular examinations for the first 9 to 12 months but not thereafter. Had all of these children been observed by a physician at regular intervals, we are sure that most of the malnutrition and anemia could have been prevented. We are also sure that in all but three cases it was not any financial difficulty that kept these babies from being taken to a physician; it was either ignorance or indifference.

It is apparent that the problem of malnutrition and anemia in children is not merely one of diagnosis and treatment, but that it is also, and perhaps primarily, one of prevention; and prevention comes through education. What education had done and is doing is well demonstrated by the greatly improved care that the infant receives today as compared with the care given a baby two decades ago. This effort must be continued, but it must be amplified to include the older infant and the young child, if we are to prevent the appearance of malnutrition and anemia in a sizeable segment of our small-child population. The pediatrician and the general practitioner must take a leading role in this undertaking.

SUMMARY

A clinical study of malnutrition and anemia in 50 young children has been presented. Effort has been made to determine the immediate and remote causes for this condition, and a method of treatment has been outlined.

117 West Cheves. (Dr. Price).

DIFFERENTIAL DIAGNOSIS OF NECK PAIN

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In the differential diagnosis of neck pain, consideration may be taken of the patient's age, the manner of onset and the duration of the pain, the severity of the pain, and the general condition of the patient. In children acute neck pain is usually due to an infectious process in the nasopharynx, the central nervous system, or the lymph nodes. In adults neck pain is often due to dental or other oral infections, postural and structural changes in the neck, muscular affections, and injuries. In the elderly neck pain may be due to cervical arthritis, vascular disease, and malignant tumors.

Points to be considered in the history taking include the location of the pain in the neck, radiation of the pain, manner of onset, recent or remote injury that might affect the neck, occupational trauma, recent or present infection, exposure to contagious disease, exposure to inclement weather, constitutional disease, and duration of the complaint and whether it is primary or recurrent.

Important points in the physical examination include age, sex, temperature, pulse rate, respiratory rate, blood pressure, habitus, obvious injury or abnormality, associated disease, and sensory, muscular, or vascular changes. The presence of any mass or swelling should be noted: its size, shape, consistency, tenderness, connection with other neck structures or with the overlying skin, and its mobility during various movements of the neck and on swallowing should be determined.

Laboratory tests that may be required include complete blood cell counts, serum agglutinations, serological tests for syphilis, x-ray examination, and spinal puncture.

INFLAMMATION OF TONSILS, PHARYNX, OR LARYNX

The neck pain of acute inflammation of the tonsils, pharynx, or larynx is usually that of a "sore throat." It may be worse on swallowing or talking and is usually accompanied by fever, malaise, and other symptoms of an acute upper respiratory infection. On examination there may be tenderness in the anterolateral neck under the angle of the jaw; oral inspection will show the congested and enlarged tonsils, often with an exudate on the surface, or, if tonsillectomy has been done, there may be only some reddening of the hyperplastic lymphoid tissue of the posterior pharyngeal wall, with or without a postnasal drip of mucopurulent material. If the tonsil infection spreads to the surrounding tissues, a peritonsillar abscess may occur. In this very painful complication, the congestion, swelling, and redness of the tonsil extend along the anterior pillar toward the uvula, or downward toward the base of the tongue. Although the majority of these acute infections of the upper respiratory tract are caused by a Streptococcus or a virus, an occasional one may be Vincent's angina, diphtheria, or agranulocytic angina. In Vincent's angina there may be involvement of the gums as well as the throat; there is usually evidence of poor oral hygiene; there is a fetor oris; the exudate forms a grayish white membrane in irregular patches, and when it is removed some bleeding occurs; the large, cigar shape bacillus and the fine spirillum of Vincent can be found in large numbers on a smear made from the raw lesion and stained with methylene blue or by Gram's method. In diphtheria there is usually a history of no diphtheria immunization or of only a remote immunization in a child or young adult of known susceptibility, of possible exposure to a case of diphtheria or to a carrier, or of an epidemic in the community. The onset is sudden, with the patient getting progressively sicker; either the nose, pharynx, or larynx may be the site of most of the infection. As the larynx becomes involved there is difficulty in breathing and tracheotomy may be required. The exudate forms a membrane that spreads over the affected area and is rather adherent to the underlying tissue, so that when part of the exudate is removed, some bleeding occurs; the organism can be cultured from this area for identification in several hours, and can often be found on a direct smear made from the raw surface and stained with methylene blue. In the relatively rare agranulocytic angina, there is usually the history of an acute sore throat or upper respiratory infection that has been treated with sulfonamides, improved, then relapsed. Or, other granulocyte depressants may have been taken. The patient gets sicker daily; areas of necrosis appear in the mouth and throat, as well as elsewhere, owing to the lack of leukocytic response to infection, and the tonsils may slough out. The history, the findings on examination, and the complete blood cell count showing the marked granulocytic leukopenia point to the diagnosis.

The uncommon retropharyngeal abscess may occur in association with an acute infection of the throat, or following an injury to the throat, as by a fish bone. The symptoms are somewhat similar to those of a peritonsillar abscess, but on examination the swelling of the posterior wall of the pharynx will be seen and can be palpated. There should be no pulsation, as in an aneurysm; the swelling should not be firm and hard, as in malformation of the vertebrae. A lateral roentgenogram of the neck usually shows the posterior wall of the pharynx displaced forward. Most of the reported cases have been in children, and on an infectious basis.

INFECTIONS OF LYMPH NODES AND GLANDS

Acute cervical adenitis may be the cause of unilateral or bilateral neck pain. The lymph node infection may be secondary to infection in the region of the neck drained by the affected nodes, or may be part of a generalized lymphadenitis, such as infectious mononucleosis. The posterior auricular and posterior cervical nodes are usually enlarged and painful in German measles, in

chickenpox, in scalp infections and infestations, and in infections of the external ear. The nodes in the lateral and anterior neck may be involved in infections of the naso-oro-pharynx, the mouth, teeth, gums, tongue, lips, salivary glands, and face. The nodes may be small or large, single or multiple, discrete or confluent and matted together. There is usually pain and soreness in the involved area of the neck and the glands are tender to palpation. It is quite important not to mistake the lateral cornua of the hyoid bone for enlarged nodes; each end of that bone is more or less sensitive to palpation, and possibly more so during an acute sore throat, when any movement of the intrinsic structure of the affected area may be painful.

In mumps, or epidemic parotitis, the painful swelling of the parotid gland often begins just under the lobe of the ear, causing some outward protrusion of that portion of the ear. The amount of pain varies from mild to severe, the condition usually being more painful in adults than in children. The swelling may extend in a few hours to involve the entire gland; it may start unilaterally or bilaterally; it may start unilaterally and become bilateral in a few days or a week; or, it may remain unilateral during the present attack. The opening of the parotid duct at the level of the upper second molar tooth is usually reddened and pouting; salivary stimulants usually cause an increase in the pain; and in some cases, opening of the mouth is quite painful. Pancreas or gonad involvement may occur as a complication of the disease. Rarely, there may be a mumps of the submaxillary or sublingual salivary glands. In such a case, the pain and tenderness are in the anterior neck, corresponding to the swelling of the affected gland.

Acute suppurative parotitis may at times cause pain in the upper part of the neck, but the main involvement and complaint is with the major portion of the parotid gland which lies over the preauricular area of the face. The condition may occur in elderly or debilitated patients with poor oral hygiene who are dehydrated following major surgery or illness. The onset is a rather sudden swelling of one or both parotids that is increasingly painful. Septic symptoms are aggravated. Unless promptly and properly treated, the condition may be rapidly fatal.

A painful postprandial swelling of the submaxillary gland may be a cause of pain in the upper anterior neck. The pain and swelling may occur at the sight, smell, or thought of food, or during a meal; it usually disappears after a meal is finished, but it may be so severe that the meal cannot be finished. The cause is an obstruction of Wharton's duct, usually by a salivary calculus, or by a fibrinous plug. During an attack the swelling may be noted. A stone, or stones, near the opening of the duct may be palpable, but if the swelling is in the substance of the gland, roentgenologic examination will be required.

MENINGITIS, MENINGISM, AND POLIOMYELITIS

The neck pain of acute meningitis is usually in the back of the neck and is increased by an attempt at flexion of the cervical spine. There are usually an associated headache, fever, general symptoms of an acute respiratory infection, possibly nausea with or without vomiting, and lassitude or irritability, and there may be a petechial rash on the trunk or elsewhere. On spinal puncture the fluid pressure will be increased, the fluid will be cloudy or turbid, owing to a marked increase in the cell count, and the causative organism may be found on smear or by culture.

Meningism may cause neck pain early in the course of some infectious diseases such as pneumonia, scarlet fever, tetanus, typhoid fever, and in pyelitis of infants. In addition to the neck pain, usually posterior, there may be headache, nuchal rigidity, positive Kernig's sign, and muscular twitchings or convulsions. Although the signs and symptoms of the primary disease are usually definite and distinct enough to indicate the proper diagnosis, on occasion it may be necessary to perform spinal puncture to rule out a meningitis; there are no changes in the spinal fluid in meningism other than some increase in amount and in pressure.

The neck pain of acute anterior poliomyelitis is also usually in the back of the neck. It may be accompanied by headache, malaise, other symptoms of an acute upper respiratory infection, fever, pain in the legs, and, at times, fibrillary twitchings of the leg muscles usually followed by more or less paralysis. The neck pain is increased by attempt at flexion of the spine. Spinal puncture usually shows increased fluid pressure; the fluid may be clear or turbid, and there is an increase in the number of cells, mostly lymphocytes and a lower total cell count than in meningitis, with no bacteria found by smear or culture.

FURUNCLES, CARBUNCLES, AND CYSTS

Furuncles and carbuncles anywhere on the neck are a common cause of neck pain. They are commoner on the back of the neck, particularly in middle-aged men of a stocky build who have a short neck, and especially in diabetics. Due to the density of the tissues of the back of the neck, the pain of a furuncle or carbuncle tends to limit the movements of the neck, and the tenderness seems to extend beyond the edge of the apparent infection. A furuncle, being smaller than a carbuncle, usually localizes and points rapidly, while a carbuncle spreads peripherally in the skin and subcutaneous tissue, and may point in several places, with the patient becoming sicker daily.

Cervical lymph nodes enlarged from Hodgkin's disease, leukemia, lymphoblastoma, tuberculosis, and metastatic carcinoma are usually not painful or tender unless secondary infection, abscess formation, or ulceration occur.

An infected thyroglossal cyst may cause pain in the anterior neck. This congenital abnormality may first cause symptoms in childhood or in early adult life. It is a cystic tumor located in the anterior midline of the neck above the thyroid gland. It moves on swallowing as it is connected with the thyroid gland; it moves on protrusion of the tongue as it is attached to the base of the tongue. An opening through the skin may discharge a glairy mucus or a purulent material. To delineate the course of the sinus, a radiopaque oil may be injected into the tract, the opening closed with a purse-string suture, and roentgenograms taken. The tract usually goes through or behind the hyoid bone.

A lateral cervical cyst may also become infected, then painful and tender. This congenital anomaly may present

as a lateral cervical swelling, or as a fistula with a continuous or intermittent discharge of secretion. It is usually first noticed in childhood, but symptoms may not occur until adult life. The upper end of the tract may extend to the tonsil fossa, while the lower end may be anywhere from the hyoid bone to the clavicle.

Sebaceous cysts often occur in the posterior or lateral neck. When they become infected, there is usually sudden enlargement, pain, and tenderness. A residual nodule, usually not tender, may follow spontaneous regression or perforation.

THYROID CONDITIONS

Acute thyroiditis causes moderate to severe pain in the thyroid region of the neck. It may be primary, may occur during the course of an acute infectious disease, or may be secondary to a contigious infection. The gland usually enlarges rather rapidly, is painful and tender, brawny and hard. The overlying skin may become reddened and indurated. Pressure symptoms often occur, and there is fever and leucocytosis, but abscess formation is not common.

Chronic thyroiditis is not common. In this condition there may be bouts of tenderness and slight pain in a progressively enlarging gland.

A diffuse nontoxic goiter is usually not painful or tender. A diffuse toxic goiter is usually not painful or tender, although it may cause a sense of fullness or tightness in the neck. A nodular nontoxic goiter may cause irregular pains in the neck from pressure on the trachea and the recurrent laryngeal nerve, or if it becomes wedged in the thoracic inlet. A toxic nodular goiter may cause similar symptoms in addition to those of the thyrotoxicosis. Hemorrhage into any nodular goiter may cause pain and sudden pressure symptoms; in arteriosclerosis there may be hemorrhage into an essentially normal thyroid gland; a blow or fall striking the anterior neck may result in hemorrhage into the gland with sudden enlargement, usually limited by the capsule, and accompanied with acute pressure symptoms and pain, with discoloration of the overlying skin.

ERYSIPELAS

Erysipelas occurring in the neck primarily or as an extension from the face may be a cause of neck pain. It may originate in a wound, but at times the source of the infection cannot be found. This red, well-defined, acute lesion is accompanied with fever and sepsis; the spread is irregularly peripheral, but the border can be both seen and felt. The skin is hot and thickened, the surface somewhat raised and irregular, and there may be tiny vesicles at the edges. It is always tender and usually painful. The condition may be more or less self-limited, or, in an undernourished, or alcoholic patient, it may be phlegmonous with severe toxic symptoms and extensive necrosis with sloughing of the skin and subcutaneous tissues.

LUDWIG'S ANGINA AND OSTEOMYELITIS

Ludwig's angina begins as a painful induration of the submaxillary area accompanied by chills, fever, and septic symptoms. The mass may be outlined by one finger in the mouth and the thumb or other hand used externally. It is secondary to oral infection and may extend downward into the anterior triangle of the lateral space of the neck. The overlying skin may become red and abscess formation may occur.

Osteomyelitis of the lower jaw may result in an acute or subacute inflammation of the surrounding soft tissues, the mass from which extends upward over the mandible as well as downward, and its connection with that bone is noticed. There has usually been a previous infection about a tooth in the area, or a necrosis following irradiation some weeks or months before. Abscess formation in this soft tissue infection is common. The pain is moderate to severe, and the patient is quite ill, but less so than the patient with Ludwig's angina, from which disease osteomyelitis of the lower jaw must be differentiated.

NUCLEUS PULPOSUS DISLOCATION

Posterior dislocation of the nucleus pulposus in the cervical spine may cause neck pain. The spinal cord, a cervical nerve root, or both, may be compressed in varying degrees, i. e., a midline dislocation may compress the cord, a paramedian dislocation may compress the cord and a nerve root, while lateral dislocations will involve only a nerve root. The cord compression syndrome is similar to that from a tumor of the spinal cord or the nerve root, and the differentiation is difficult. There may be stiffness and pain in the neck with radiation into one or both shoulder girdle areas, arms, forearms, or hands, as well as sensory disturbances and motor weakness in one or both upper extremities, depending on the segmental involvement. There may also be varying degrees of sensory alteration and motor weakness in the trunk and lower extremities. Approximate localization of the lesion from the clinical standpoint is usually not difficult, while the exact level may be confirmed by myelography. Unilateral dislocation involving a single nerve root is the commonest, and ordinarily occurs at the sixth intervertebral disk involving the seventh cervical nerve root, or at the fifth disk involving the sixth nerve root. The first symptom may be pain, often limited to the lower neck. Recurring attacks of regional pain associated with some neck stiffness are followed by attacks of severe radiating pain spreading to the scapula, tip of the shoulder, the arm, and the upper chest. At times it may radiate along the medial aspect of the forearm and hand. The pain may be aggravated by movements of the neck, and by coughing, straining, or sneezing. There may be attacks of numbness and tingling of the forearm and hand. There may be some temporary relief by elevating the arm above the head. Examination shows the head and neck are held in a rather fixed position and movements of the spine are done in a guarded manner. There may be spasm of the cervical and shoulder girdle muscles, as well as muscle atrophy and fibrillations. The determination of areas of altered sensation and muscle weakness is of localizing value. On pressure applied to the top of the head with flexion to the side of the lesion the symptoms may be brought on or aggravated. Head traction usually gives relief. For the roentgen examination, anteroposterior, lateral, and oblique films are needed. Of particular significance are the loss of cervical lordosis, and the narrowing of an interspace and intervertebral foramen. A lateral view taken with the neck

in full flexion and compared with one taken in extension may show marked restriction of movement in the lower cervical spine.

COMPRESSION SYNDROMES

Cervical ribs may or may not cause neck pain. The symptoms may be nervous, muscular, vascular, or a combination of these. Nervous symptoms of pain, hyperesthesia, hypoesthesia, or paresthesia may occur in the neck, arm, hand, shoulder, or upper chest, either front, back, or side. There may occur weakness of one or more muscles of the arm or hand. Vascular symptoms include coolness, color changes, trophic changes, and increased perspiration of the involved upper extremity. Adequate roentgenograms of the cervicothoracic spine will show the rib abnormality, while physical and neurological examination, together with special tests to detect compression of the brachial plexus or subclavian artery, will differentiate the cervical rib syndrome from similar conditions.

The scalenus anticus syndrome may cause neck pain and other symptoms quite similar to those of the cervical rib syndrome. The scalenus anticus muscle may be tender, and the symptoms may be temporarily alleviated by diagnostic anesthetization, i. e., by injection of 3 cc. of 1% procaine into the muscle. By the Adson maneuver, the subclavian artery and portions of the brachial plexus may be compressed so that the symptoms due to the scalenus anticus syndrome may be aggravated, or brought on during an asymptomatic stage. In this test, the patient sits or stands with the two hands in corresponding positions of rest; he then turns the head to one side, elevates the chin, and takes and holds a full inspiration while the examiner feels the radial pulse on each side. In the positive test there will be a marked diminution or complete obliteration of the radial pulse, and/or increase in pain or paresthesia of the arm when the test is performed with the head turned to the affected side.

The costoclavicular syndrome may also cause neck pain and other symptoms due to compression of the subclavian vessels in the space between the first rib and the clavicle. X-ray examination may indicate smaller than normal space between the rib and clavicle on the affected side. In this syndrome, compression of the subclavian vessels is lateral to the point of compression that occurs in the scalenus anticus syndrome and can be demonstrated by two maneuvers. In the first maneuver, the patient assumes an exaggerated military position of attention and takes and holds a deep breath, with the result that the radial pulse is obliterated on the affected side, and a bruit can be heard just under the clavicle where the subclavian artery is being compressed. In the second maneuver, the same results occur when the arm on the affected side is raised high overhead. In these maneuvers, the already small space between the first rib and the clavicle is further narrowed, and the subclavian vessels compressed, partially or completely.

In the scapulocostal syndrome of adults with round shoulders and a drooping shoulder girdle there may be pain in the back of the neck, but the main complaint usually is of deep shoulder pain, and a definite trigger point may be found beneath the upper medial angle of the scapula.

CERVICAL SPINE ARTHRITIS AND INJURIES

Arthritis of the cervical spine is a common cause of neck pain in adults and in the elderly. The onset is usually gradual with pain of a radicular pattern. Examination will show that the movements of flexion, side-bending, and rotation are restricted, and tenderness with little muscle spasm may be noted over one or more of the spinous processes. There may be evidence of arthritis elsewhere, particularly in other parts of the spinal column. Careful x-ray examination of the cervical spine will usually show the arthritic changes, often more marked than the symptoms would indicate, so the clinical differentiation must be made from other possible cause of neck pain in the patient under consideration.

Cervical spine injuries of greater or less degree, recent or remote, may be the cause of neck pain. In open wounds and other severe injuries, the appropriate physical, neurological, and roentgenological examinations are indicated by the injury. In remote injuries, or in minor injuries without involvement of the spinal cord, a careful history should be taken in order to determine the probable force acting at the time of injury. The recoil mechanism in effect at the time of the cervical spine injury may minimize the apparent extent of the injury, so thorough roentgenological examination is needed. Films taken through the open mouth, or with the moving jaw technique are usually required for good views of the odontoid process and of the atlantoaxial articulation. In fractures or dislocations, even without cord symptoms, the patient usually holds the head in an abnormal position, and tenderness may be found on one or both sides of the neck at the level of the injury.

CAUSES OF SUDDEN PAIN

The pain of a "crick in the neck," acute torticollis, acute cervical myositis, or acute cervical myalgia, is usually of sudden onset on awakening after sleep, or follows exposure to inclement weather, is usually accompanied with some of the symptoms of an acute upper respiratory infection, affects the posterior neck muscles, and is aggravated by jarring or sudden movement of the neck. The patient holds the neck rigid in the position of least pain, and the affected muscles may be tender and taut.

A rather acute neck pain, usually unilateral, may often be associated with, or as the presenting symptom of, a virus infection of the respiratory tract. There may be slight fever and a normal or depressed leukocyte count. Other symptoms may occur, so that a diagnosis of influenza, virus pneumonia, or of other disease, may be made.

Subclavian aneurysm may cause pain in the lower neck as the severe boring pain due to compression erosion of the clavicle. The pain may begin rather suddenly, or increase in severity suddenly, even though the aneurysm is hardly noticeable. A history of syphilis, or of a stab or gunshot wound in the area, and careful examination will usually point toward the diagnosis.

LESS COMMON CONDITIONS

The pulmonary sulcus tumor of Pancoast, an anatomical rather than a histological entity, may invade the brachial plexus causing neck pain, and pain in the dis-

tribution of the affected nerves. It may also cause Horner's syndrome, and it may cause symptoms suggestive of an esophageal diverticulum. The tumor arises in the apex of the lung and its symptoms are usually due to its local and expansile growth, rather than to metastases. However, any tumor arising in, spreading to, or metastasizing to the region could cause the symptoms.

Pain in the side of the neck following acute mastoiditis may be due to a Bezold's abscess. The pus from the perforation of the tip of the mastoid process extravasates within the sheath of the sternomastoid muscle, breaks through near the middle, and forms a definite, painful abscess between that muscle and the submaxillary area. This is accompanied by exacerbation of the illness, tenderness and swelling in the area, and perhaps by redness of the overlying skin.

Pain in the side of the neck may be caused by an infected esophageal diverticulum that is sore and tender. If it is large, there may be dysphagia, or other pressure symptoms. The diverticulum usually presents itself as a mass that appears in middle or late life, usually on the left side of the neck, usually lateral and posterior to the thyroid cartilage or just below this area, and it varies in size from time to time, i. e., it increases in size with eating, and may completely disappear when no food is taken for several hours. It may rarely be seen, may be palpated when distended, and has little if any mobility and a doughy consistency. The opening may be seen on esophagoscopy, and roentgenologic study of the esophagus with opaque material will verify the diagnosis.

CONDITIONS IN THE LARYNX

Tumors of the larynx usually cause hoarseness as the first symptom, but a sense of throat discomfort or actual pain may also occur. Papillomas of the larynx usually occur in children, oftener in boys, and have a tendency to recur and to be transplanted to adjacent parts; these tendencies are less common in adults. Carcinoma of the larynx usually occurs between the ages of 40 and 60, and is several times commoner in men than in women. While the first symptom may be hoarseness, by the time a physician is consulted there is often discomfort or pain in the larynx. At this time, or later, there may be aphonia, dysphagia, dyspnea, and other symptoms. By indirect or direct laryngoscopy with biopsy of the lesion, the tumors can be differentiated and the diagnosis made.

Tuberculosis of the larynx may cause a sense of slight pressure or irritation of the throat, or a feeling of dryness and burning. Roughness of the voice, or frequent clearing of the throat may occur. The voice may tire easily, and evening hoarseness occur. Pain on swallowing develops if the epiglottis, arytenoid cartilages, or aryepiglottic folds are involved, as the laryngeal involvement is usually secondary to the pulmonary, and there is more or less cough. By laryngoscopy the lesions may be seen, particularly when the direct method, which lifts the epiglottis, is used. In the early stage of infiltration there may be relatively nonspecific changes, as slight congestion or reddening of the posterior wall of the larynx, or an "ashen gray" anemia of the mucosa at times. Later there may be seen laryngeal congestion with or without yellow nodules or tubercles in the submucosa with intact epithelium of the mucous membrane. There may be irregular thickening of the mucous membrane of the posterior wall of the larynx, or the vocal cords may be involved early, as shown by a rounding in the posterior third, giving the cord a spindle shape. Later there may be confluence of the tubercles, then necrosis of the overlying epithelium, with production of an ulcer. The ulcers may be of any size, single or multiple, discrete or confluent, and on one or both sides. The tuberculous ulcer spreads slower than the syphilitic ulcer, but faster than the carcinomatous ulcer. The tuberculous ulcer is rather superficial and is covered with a grayish exudate; the syphilitic ulcer has a punched-out appearance and is covered with a yellowish exudate; while the carcinomatous ulcer is raised due to deeper infiltration and is usually confined to the vocal cord or ventricular band on one side. Tuberculous perichondritis of the epiglottis and arytenoid cartilages may occur from a deep ulcer of the mucous membrane. A tuberculoma may occur as a pedunculated fibrotuberculoma or a granulotuberculoma may occur on the back wall of the larynx or on the vocal folds. Later, when the tubercles are large enough or numerous enough to interfere with the circulation of the larynx, edema results. It usually occurs in the epiglottis, the aryepiglottic folds, and the vocal folds. In practically all cases of tuberculosis of the larynx, tubercle bacilli may be found in the sputum and there is a productive and exudative cavernous tuberculosis of the lungs.

List of Causes of Neck Pain

Disease	In Whom Found		
	Child	Adult	Elderly
"Sore throat," and similar conditions	+	+	+
Acute cervical adenitis	+	+	+
Mumps	+	+	0
Acute suppurative parotitis	0	+	+
Salivary duct obstruction	0	+	+
Meningitis	+	+	0
Meningism	+	+	0
Acute anterior poliomyelitis	+	+	0
Furuncle	+	+	+
Carbuncle	0	+	+
Thyroglossal cyst	+	+	0
Lateral cervical cyst	+	+	0
Acute thyroiditis	+	+	0
Goiter	0	+	0
Thyroid gland hemorrhage	0	+	+
Erysipelas	0	+	+
Ludwig's angina	0	+	+
Osteomyelitis of jaw	0	+	+
Cervical spine injury	+	+	+
Cervical disk syndrome	0	+	0
Cervical rib	0	+	0
Scalenus anticus syndrome	0	+	0
Costoclavicular syndrome	0	+	0
Scapulocostal syndrome	0	+	0
Cervical arthritis	0	+	+
"Crick in the neck"	+	+	0
Virus respiratory infection	0	+	+
Subclavian aneurysm	0	+	+
Pancost's tumor	0	+	0
Bezold's abscess	+	0	0
Esophageal diverticulum	0	+	+
Laryngeal tumor	+	+	+
Laryngeal tuberculosis	0	+	0
Esophageal tumor	0	+	+
Syphilis of pharynx and larynx	0	+	+
Foreign body in larynx	+	+	+
Subdeltoid bursitis	0	+	0
Herpes zoster	0	+	+
Epidural abscess	+	+	+
Primary tumor of cervical spine, nerve, or cord	0	+	0
Metastatic tumor of cervical spine	0	+	+
Carotid hypersensitivity, or tumor	0	+	0
Cardiac disease	0	+	+

In the secondary stage of syphilis there may be a slight sore throat; redness and congestion, or mucous patches may be found in the oropharynx, and there may be a relatively painless cervical and/or generalized lymphadenopathy, and a positive serological test for syphilis. In the tertiary stage, the gumma may break down forming

an ulcer, e. g., in the larynx, on the anterior portion. There is mild to moderate pain that is increased on swallowing. The ulcer has a deep, punched-out appearance, some induration occasionally, little if any edema, a yellowish exudate on the base of the ulcer, and at times perichondritis and chondritis at the bottom of the ulcer.

Foreign bodies in the larynx usually cause a sudden attack of coughing, and choking and a feeling of discomfort or pain in the larynx. If the foreign body remains in the larynx, voice changes, wheezing, and possibly cough, will be noted on examination. If the object is large, dyspnea, and even asphyxiation may occur. If the material is radiopaque, it may be found on x-ray examination. A history of definite or of possible aspiration of a foreign body is usually available.

BURSITIS AND HERPES ZOSTER

In an acute subdeltoid bursitis there may be pain radiating into the neck from the shoulder region. The pain is aggravated by attempts to abduct or rotate the arm, and often radiates down the arm. It is fairly common in adults. Usually there is no history of injury, but there may have been some overexertion. Tenderness is fairly well localized at the region of the subdeltoid bursa, and there may be a visible swelling at that point. The x-ray examination may or may not show calcium deposits in the subdeltoid bursa, or in the supraspinatus tendon in recurrences of the condition.

Herpes zoster of the neck begins as a pain of a neuralgic nature, at times during or soon after an acute infectious disease, followed by the appearance of crops of vesicular skin lesions over the course of one or more of the major nerves. The individual skin lesion is a clear vesicle with surrounding hyperemic zone. If the vesicle is ruptured, secondary infection may occur with the formation of ulcers, either discrete or confluent. In youth, herpes zoster is a relatively minor disease, while in adults and the elderly it is more painful, and residual pain after disappearance of the skin lesions may be a protracted complaint.

ABSCESSES AND TUMORS OF THE CERVICAL SPINE

An epidural abscess of the cervical spine may cause posterior neck pain that is exaggerated by coughing, sneezing, straining, or movement of the spinal column. The signs and symptoms of systemic infection are present; the abscess may be part of a septicemia, usually staphylococcic, or it may be the only metastatic process from a primary lesion situated elsewhere, e. g., furuncle, cellulitis, osteomyelitis, and others. Spasm of the posterior neck muscles may be present, and there is marked tenderness over the spinal column in the region of the abscess. Radicular pains from the abscess area are common. Hyperesthesia, paresthesia, and numbness may be present in the zone of the involved nerve roots. The resulting compression type of myelitis produces rapidly progressive signs of a transverse lesion situated below the level of the abscess. Partial or complete spinal canal block may be demonstrated by lumbar puncture before definite signs of compression occur. However, the performance of lumbar puncture and the removal of even a small quantity of fluid might produce an immediate paraplegia. An early diagnosis is so important that this risk may usually be well justified.

Primary and metastatic tumors of the cervical spine, of the cervical cord, and of the cervical nerves, usually cause pain in the distribution of the affected nerve. Although neither is common, the primary is more likely to occur in adults, while the metastatic affects the elderly, as a rule. Particularly in the case of primary tumors is it important to make a tentative and localizing diagnosis as early as possible, for, not only may the tumor be benign, but also an early benign tumor may often be removed with such conservative surgery that little disability remains. The neck pain of these primary and metastatic tumors is usually of gradual onset, intermittent, worse at night, progressive in severity and extent, usually follows the distribution of the affected nerve, and is accompanied after a variable length of time with sensory and muscular symptoms in the arm of the same side. Primary tumors of the cervical spine usually involve the nerves rather than the cord, and primary tumors of the cervical nerves are usually extramedullary, so these classes of tumors do not cause spinal fluid changes. On the other hand, primary cord tumors, extramedullary intradural tumors, and metastatic tumors to the spine usually do cause definite changes in the spinal fluid, both clinically and physically. In all cases roentgen examination of the cervical spine is needed; spinal puncture is usually required; myelography may be needed; and in some cases not until laminectomy can the proper diagnosis be made.

MISCELLANEOUS CAUSES

On occasion, neck pain associated with attacks of dizziness and mild syncope, especially on turning the head to the side, may be found due to a tightly fitting collar in a man having a sensitive carotid sinus or a carotid tumor. In some instances the collar may be worn so tightly that the venous return through the superficial neck veins, as the external jugular, is interfered with, and the congested, suffused appearance of the patient's upper neck and face is relieved almost at once when the collar is loosened.

Pain in the neck, more particularly in the root of the neck on the left side, may occur in angina pectoris, acute myocardial infarction, and in cardiac decompensation. In such cases the neck pain is usually referred from the cardiac region, and the other symptoms and signs of the disease present overshadow the relatively minor neck complaint.

Various diaphragmatic and abdominal diseases may at times have pain referred to the root of the neck as one complaint elicited in the history. Such conditions as diaphragmatic pleurisy, subphrenic abscess, liver abscess, acute perforated gastric or duodenal ulcer, acute pancreatitis, acute cholecystitis, ruptured ectopic pregnancy, and others occasionally cause such pain, but the other more characteristic symptoms and signs of the disease indicate at once that the source of the complaint is not in the neck.

CONCLUSION

In conclusion, it may be said that while in many cases the cause of neck pain will be obvious on short examination, in others a most meticulous history, careful physical and neurological examination, and certain laboratory tests will be required before even the most astute clinician can arrive at the proper diagnosis. A list of common causes of neck pain is given.

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CLASSIFICATION AND MANAGEMENT OF REACTIONS TO LOCAL ANESTHETIC AGENTS

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Reactions to local anesthetic agents are far commoner than is frequently assumed. In the majority of cases, however, they are of such a mild and transient nature that they require no treatment and tend to escape attention altogether. Such reactions may manifest themselves merely in some degree of excitement or talkativeness and thus may be attributed by the unwary to "hysteria"; in reality they are signs of cortical stimulation, which in their ultimate degree would have manifested themselves as convulsions had the reactions been of a severer type. It therefore behooves the administrator to bear in mind constantly that all local anesthetic agents, be they topical or administered by infiltration, have certain toxic potentials. It is imperative that the possible reactions should be known and correctly interpreted in order that rational treatment may be instituted at once.

It is the object of this paper to promote a clearer understanding of the pathological processes that underlie these toxic reactions and to suggest a classification on that basis, thus facilitating the institution of a rational line of therapy when reactions are encountered.

FACTORS INFLUENCING THE TOXICITY OF LOCAL ANESTHETIC DRUGS

There is a great variation of toxicity from one drug to another. If, for purposes of comparison, we assign to procaine the arbitrary toxicity standard 1, that for piperocaine (metycaine®) hydrochloride would be 3; for cocaine 4; tetracaine (pontocaine®) hydrochloride, 12 to 20; and dibucaine (nupercaine®) hydrochloride, 20. These figures are derived from animal experiments, and thus may not be strictly applicable to man. In clinical practice, in any case, these relative toxicity values do not pertain, because the more potent drugs are effective in greater dilution as are, for instance, tetracaine and dibucaine.

The toxicity for any given drug depends on many factors, which we shall now consider in some detail as they are of the greatest practical importance.

Susceptibility of the Patient.—Patients differ in their susceptibility to local anesthetic drugs, as indeed they do for all therapeutic agents. The words "hypersensitivity," "idiosyncrasy," and "allergy" are generally applied loosely. They are not nearly so common as one is made to believe. Only after errors of judgment in quantity and concentration of the drug and technical faults of administration have been ruled out is it permissible to postulate any one of these states.

A careful anesthetic history must be taken in all cases; and if the patient has had previous local anesthesia, his reaction to these should be thoroughly investigated. If, from this history, true hypersensitivity is suspected, it may be advisable to employ a local anesthetic drug belonging to a different chemical group, if the originally used drug is known. Or better still, unless the indications for local anesthesia are strong, some form of general anesthesia should be employed. In any case it must be emphasized that the patient who has manifested signs of reactions to local anesthesia must be informed of the fact, and should be told what drug has been employed so that he may pass on this information to any physician who might undertake another injection of a local anesthetic drug at a later date.

The problems of psychomotor reactions and of reactions to vasoconstrictor drugs, which also may be expressions of individual susceptibility, will be discussed later.

Total Weight of Drug Injected.—For the average healthy individual there is an average dose by weight for each drug. This dose should be adjusted to the patient's physical status, age, state of nutrition, and other factors affecting his metabolic state. Any excess must be considered an overdose and likely to be followed by untoward reactions. Albert has shown the effectiveness of much smaller doses than are commonly employed, provided a technique is used which is correct in all details.

Concentration of Solutions.—It has been said that the toxicity of a local anesthetic drug increases in geometrical, not arithmetical, progression with increase in concentration. Thus while a given amount of a 1% solution would be four times as toxic as the same quantity of a 0.5% solution, a 2% solution would be approximately 16 times as toxic as an equal amount of a 0.5% solution. The great importance of employing the weakest concentration that will give adequate analgesia would thus become apparent. However, these ratios, in our opinion, are probably indicative only of the general trend of toxicity, and their exactness must await further corroboration. As a guide one may say that the concentrated solutions are needed only for the blocking of large nerve trunks and plexus blocks, and the more dilute solutions for skin infiltrations. It is also advantageous to bear in mind that sensory nerves, being of smaller caliber than motor fibers, can be anesthetized with weaker solutions and that onset of anesthesia is more rapid than motor paralysis. Gasser and Erlanger state that sensory fibers require only one-tenth the strength of local anesthetics as compared with motor fibers. This fact may be made use of where anesthesia but not motor paralysis is required. In tendon repair, for instance, identification

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This article has been shortened for publication owing to lack of space by omission of the bibliographic references. These will appear in the author's reprints.

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of a retracted proximal fragment may be facilitated greatly by this technique, which has the added advantage of the use of a solution of distinctly lower toxic potentiality. Nevertheless, whatever the concentration, the safe total dose for the particular drug used should not be exceeded.

Characteristics of the Area to Be Injected.—The vascularity of the part into which injection is made is a major factor in influencing the toxic effect of the solution used, as it significantly affects the rate of absorption and thus the concentration in the blood at any given time. It is this blood level of the drug that presumably is the important factor in the causation of toxic reactions. Slow absorption means a low blood concentration; rapid absorption, a high one, which may attain toxic levels. The persistence of this high level, however, will depend on the rate of breakdown of the agent.

This concept of the rapid establishment of a high blood level of the drug due to absorption from a highly vascular area explains the high incidence of untoward reactions following the topical application of moderately concentrated solutions of tetracaine to the mucous membranes of the mouth, nose and throat—all areas of great vascularity. Moreover, some of the solution is often inhaled into the bronchial tree or ingested; and absorption from the respiratory and intestinal tracts is very rapid indeed, owing to the large capillary plexi in these areas. The patient should always be instructed to spit out any excess of solution and not to swallow it.

Because of increased vascularity, injection into inflamed areas should be avoided, apart from the fact that such injections are painful, that anesthesia is often incomplete, and that the injection may contribute to the dissemination of the septic process.

The addition of vasoconstrictors to the anesthetic solution will diminish the rate of absorption. They will therefore help to prevent the establishment of a toxic blood concentration; but by themselves they carry a certain possibility of reactions, as will be shown later.

Direct intravascular injection must be guarded against by the scrupulous performance of the aspiration test several times during the injection. It must be remembered, however, that blood may not always be obtained on aspiration when a small needle is being used, even if the needle has entered a blood vessel. Careful aspiration also must be performed when injection is made near or at the spinal column, as in paravertebral and caudal blocks. Dural prolongations of variable length accompany the nerve roots at their emergence from the spinal canal, or the dura mater may be prolonged below the second sacral segment. Inadvertent subdural injection would lead to the establishment of a massive spinal anesthesia with the most serious consequences. Furthermore, a large plexus of veins is found in the vicinity of the dura, and absorption from this highly vascular area may be rapid even if intravascular injection is avoided.

Pleural puncture or injection into a viscus must be equally guarded against and the possibility must be kept in mind. Chivers estimates the incidence of pneumothorax following intercostal nerve block at 19%, and not infrequently the same complication accompanies brachial plexus anesthesia and block of the stellate ganglion.

Rate of Injection.—As we have seen, toxicity is directly proportional to the rate of absorption and of destruction through the establishment of a high blood level of the drug. Rapid injection causes increased absorption of the drug irrespective of the vascularity of the area and thus increases the toxicity of the local anesthetic agent. Also, should an inadvertent vascular puncture be made, the possibility of a larger amount of solution entering the blood stream will be enhanced by rapid injection.

It should not be overlooked that a fast injection adds materially to the patient's discomfort, as it causes a sensation of pressure at the site of injection.

The Patient's General Condition.—In the aged, debilitated, or shock patient, or in others with low metabolic rate or decreased body mass, the dose of the drug must be reduced. This can be achieved best by employing a less concentrated solution. Richards has shown in animal experiments that starvation and ascorbic acid (vitamin C) deficiency increase the animal's susceptibility to procaine convulsions. He therefore recommends the administration of ascorbic acid and dextrose preoperatively in cases of debilitated and poor risk patients.

Other Factors Influencing Toxicity.—Some drugs, such as cocaine, because of their toxicity, are unsuitable for infiltration purposes. Richards and co-workers have shown that in animals the split-products of procaine reduce the incidence and severity of convulsions. Finally, thiamine (vitamin B_1) has been investigated as a supplement to local anesthesia. The question as to whether it diminishes local irritation and toxicity and potentiates anesthesia is still open.

REACTION TO LOCAL ANESTHETIC AGENTS

There is no satisfactory way of testing for possible abnormal responses, and one must rely on the patient's history of reactions to previous injections of local anesthetic agents. Only the very rare allergic responses can be elicited by skin or eye tests, which thus become practically valueless. Allergic reactions, their incidence and symptomatology, will be discussed later.

All previous classifications of reactions to local anesthetic agents have been based chiefly on clinical manifestations without due consideration of the diverse underlying pathological phenomena. The terms used are therefore generic rather than specific. Any of the pathological reactions may assume a predominant role in any given case; and treatment, to be effective, must be directed primarily toward counteracting that particular main reaction.

These requirements are not fulfilled by classification of reactions into "immediate" and "delayed," "reaction" and "idiosyncrasy," "true toxicity" and "idiosyncrasy," "nervous convulsive type" and "asthmatic type." They are only partially fulfilled by the classification of Knoefel and co-workers into "prolonged course with primary respiratory failure" and "short course with primary cardiac failure"; or Betlach's distinction of "circulatory" and "neurologic" reactions. Hellijas and Tovell state that death from severe procaine poisoning is primarily due to respiratory failure, while that from dibucaine poisoning is primarily due to primary cardiac failure.

Our approach to the subject will be under the following headings:

I *TOXIC RESPONSES IN NORMAL INDIVIDUALS*

A. *Central Nervous System Effects*

1. Stimulation
2. Depression

a. Cerebral cortex

b. Medulla

(1) Respiratory
(2) Vasomotor
(3) Others

B. *Peripheral Effects*

1. Cardiovascular
   a. Direct action on the heart
   b. Action on the vascular bed
2. Respiratory tract

II *ABNORMAL RESPONSES*

1. Allergic responses
2. Hypersensitivity
3. Idiosyncrasy

III *REACTIONS NOT DUE TO THE LOCAL ANESTHETIC AGENT*

1. Psychomotor
2. Vasopressor

Pharmacologically, one deals with an overstimulation to the point of depression in all cases of toxic reaction to local anesthetic drugs. All types of reaction may be encountered simultaneously to a varying degree, or consecutively in one and the same case. The relative preponderance of each manifestation must be assessed in each case, and treatment instituted accordingly.

TOXIC RESPONSES IN NORMAL INDIVIDUALS

Central Nervous System Effects.—Stimulation:—According to the principal sites of central nervous system stimulation, a multitude of reactions can occur. Some of these are apprehension, a feeling that "all is not well," loquacity, nervousness and restlessness, choreiform movements, tremors, and twitchings. If cortical stimulation is more pronounced, generalized clonic convulsions may supervene. Tatum and his co-workers have shown that in animals prophylactic barbiturates raise the minimal lethal dose of cocaine three- to fourfold and that protection increases the higher the development of the species of animal. They infer that very high protection should logically be afforded in humans, a contention that has been borne out by clinical observation. Unfortunately, however, barbiturate prophylaxis and treatment have been much overemphasized. Indeed, they do raise resistance to those reactions which are due to central nervous system stimulation—that is, the ones of convulsant type. But as Knoefel and his co-workers have shown, they are quite ineffective in preventing reactions of the "paralytic" type. We would go even further and say that barbiturates, being depressants of the central nervous system (and therefore so useful in counteracting the central nervous system stimulation type of reaction), will be decidedly harmful in those cases in which central nervous system depression follows on stimulation. Again, areas of depression may coexist with others of cortical stimulation, and in all such cases barbiturates over and above the strict requirements to prevent or counteract convulsions may potentiate such depression to a dangerous degree. The depression which is most feared is that of the vital centers in the medulla. It is precisely these centers which are often depressed simultaneously with cortical stimulation and which are also most forcefully depressed by barbiturates. Tatum has shown that if cortical manifestations of stimulation are controlled, the medullary centers are more resistant, and the animal exhibits an increased tolerance toward the drug. If uncontrolled, the cerebral stimulus so affects the poisoned medullary centers as to lead to their complete failure. He has also demonstrated that the likelihood of recovery is inversely proportional to the time the convulsions are permitted to continue. Burstein, from his observations on the treatment of acute arrhythmias during anesthesia by intravenous procaine, carries the argument one step further by stating that general anesthesia, not only barbiturates, probably affords specific protection against the stimulating action of procaine on the central nervous system.

On rare occasions central nervous system stimulation may manifest itself solely or predominantly by an increased rate and/or depth of respiration or by the appearance of tachycardia, because of selective stimulation on the part of the local anesthetic drug of the central respiratory or vasomotor mechanisms, respectively. Undue stimulation of the vomiting center may produce nausea, gagging, or actual vomiting. These reactions are of little clinical import by themselves, except in that they indicate the existence of a toxic reaction. They thus serve as warning signals that more dangerous reactions may possibly supervene.

From the foregoing considerations, the following line of treatment emerges for those cases in which central nervous stimulation is the predominant feature. Prophylactic, short-acting barbiturates are desirable; they should be given intramuscularly about two hours before local anesthesia is begun, and their administration should be repeated if necessary. As soon as signs of central nervous system stimulation become apparent, for example, anxiety, excitement, or confusion, one should prepare injections of intravenous ultra-short-acting barbiturates, giving minimal doses in an attempt to prevent the onset of convulsions if the mild warning signs show no tendency to abate spontaneously or if they keep increasing in intensity. If the milder manifestations have not been observed and true tremors or convulsions are the first signs of a toxic reaction, then ultra-short-acting barbiturates must be given intravenously without delay. They should be administered slowly, however, and the effect observed. Only a sufficient amount should be given to arrest these tremors or convulsions, thus minimizing the depressant side-effects of the barbiturate on the medullary centers and on the vascular bed. Meanwhile a close check must be kept on the pulse and the blood pressure, and oxygen should be administered. Convulsions, whatever their cause, invariably carry with them a degree of hypoxia from interference with the muscles of respiration, which become involved in the convulsive process. Thus, independent of the state of the respiratory center, which may

or may not be depressed, maintenance of adequate oxygenation is mandatory. But as a degree of medullary depression must always be assumed to accompany cortical stimulation, administration of oxygen must be started as soon as the first signs of stimulation become apparent and before convulsions appear, so that hypoxia may be prevented at all costs.

In an attempt to prevent reactions due to central nervous system stimulation, various authors have recommended the simultaneous administration of procaine and barbiturates and Tormey has described the synthesis of a procaine barbiturate instead of the usual hydrochloride. It is claimed that this product is more potent by one-third than the hydrochloride and that it has some sedative properties. Tormey predicts that it may also be safer because of the barbiturate radical. This, however, is still under investigation, and the question must remain open for the time being.

Depression:—Central nervous system depression may follow or accompany stimulation, but the phase of stimulation may be transient and depression appear to be primary. This fact has prompted some observers to state that toxic manifestations after procaine injection are the result of medullary depression; but we believe that some degree of stimulation, however slight, invariably precedes or accompanies such depression. This apparent primary depression has been observed repeatedly where procaine has been given intravenously for therapeutic purposes and where unconsciousness has supervened without obvious cortical stimulation. Allen, who has described this reaction in some detail, draws attention to the fact that the faculty of speech is lost before the onset of unconsciousness, and thus serves as a useful warning sign.

Apart from loss of consciousness, central nervous system depression is characterized by flaccidity, relaxation, and respiratory and vasomotor depression. Death ensues from respiratory failure.

Central vasomotor reactions are characterized by manifestations such as fainting, pallor, cyanosis, palpitations, and precordial discomfort. Typically, procaine and related synthetic local anesthetics cause bradycardia presumably through sympathetic blocking, whereas in cocaine reactions tachycardia is engendered by sympathetic stimulation. Blood pressure responses are variable with all agents. Sudden cardiovascular collapse and death are relatively rare, except after marked overdose. It is worth noting that a relatively large number of these fatalities or of severe reactions have followed topical anesthesia of the throat and larynx, and that in most cases concentrations and doses have been used that we consider to be within a potentially toxic range. Other fatalities have followed a second administration of an anesthetic after an uneventful first one under allegedly identical conditions. But we have been unable to find any conclusive evidence from the description of these cases that one dose sensitizes to a second injection, as is claimed. Neither inadvertent intravenous injection nor an overdose, relative or absolute, can be definitely ruled out in the cases cited by these authors. Moreover, Allen reports that some patients have had uneventful intravenous injections of procaine both before and after one which was accompanied by loss of consciousness. This would seem to rule out a state of sensitization from the first administration and confirm our view that when a reaction occurred it was due to an overdose.

Treatment of central nervous system depression is directed toward the maintenance of adequate respiration and circulation. Artificial or assisted respiration with oxygen must be instituted at the first indication or suspicion of impending hypoxia, as we have pointed out previously. In rabbits, artificial respiration alone protects from three to three and one-half times the minimal lethal dose of cocaine, according to Tatum; but this is not so in higher species of mammals.

Knoefel and his co-workers have found that respiratory stimulants are of no value in effectively combating respiratory depression from local anesthetic drugs. We agree, and would even go so far as to say that they are actually contraindicated. We have found nikethamide (coramine®), picrotoxin, and similar drugs of little use in these cases.

Just as in central respiratory depression our line of attack is on the maintenance of the peripheral mechanism by artificial respiration rather than by the administration of central stimulating drugs, so also in vasomotor depression of central origin do we prefer to rely on vasopressor drugs with a minimum of central nervous system effect. We feel that overstimulation of the depressed central mechanism may only serve to still further depress these centers.

In the actual treatment of central vasomotor depression we have found cyclopentamine hydrochloride ("clopane") and methoxamine hydrochloride (vasoxyl®) to be the drugs of choice because of their prompt and prolonged action with minimal central nervous system side-effects. Doses of 10 mg. intravenously usually will be found adequate. A slight head-down tilt of the table is recommended because this will aid in maintaining as satisfactory a blood supply to the vital centers as is possible under the circumstances. This tilting of the table must be effected gradually and gently, and should not exceed 10 degrees, since circulation otherwise will be still further embarrassed and any advantage of the head-down position will be lost. Administration of fluids should be started immediately by someone other than the anesthetist, because the latter's assignment must be a constant and close observation of the patient. The administration of a carbon-dioxide-oxygen mixture may be of value in these instances, because of the cerebral vasodilatating, peripheral vasoconstricting, and central nervous system stimulating effects of carbon dioxide.

Cardiovascular Peripheral Effects.—Direct Action on the Heart:—We know from the work of Beck and Mautz, Burstein and his group, Tovell and Barbour, Graubard and Peterson and others that intravenous procaine in therapeutic doses reduces myocardial irritability; and this property is being made use of clinically. Hatcher and co-workers feel that direct toxic action on the heart is the chief cause of death after intravenous injection of large doses, respiratory failure being a secondary phenomenon. Knoefel and his associates are of the opinion that in subcutaneous injection the first organ to respond to the small

amount of local anesthetic in the blood is that organ which is the most sensitive—namely, the brain. In intravenous injection, on the other hand, the heart, being the first organ to be reached by a massive dose, may be the first to fail. They feel justified in this assumption, having observed that drop of blood pressure in these cases follows injection of the drug so closely, and below the circulation time, as to rule out a primary effect on the medullary centers. This concept would explain the rare cases of fatalities occurring immediately on injection, while in other less rapid cases of fast absorption from a highly vascular area it may at least be a partial factor.

Treatment is that of cardiac arrest, with artificial respiration and institution of the routine of manual artificial circulation with all that this line of treatment implies.

Action on the Vascular Bed:—The signs and symptoms here are those of peripheral vascular collapse. Treatment should be aimed at combating stagnant hypoxia by the use of vasopressors, fluid therapy, oxygen, and a slight head-down tilt of the table.

Peripheral Effects on the Respiratory Tract.—These are exceedingly rare manifestations, characterized by such phenomena as bronchospasm, asthma-like attacks, and other rare and often somewhat bizarre conditions such as respiratory hypersecretion, rales, and rhonchi. These are probably expressions of an allergic state, and will be discussed more fully below.

ABNORMAL RESPONSES

Allergic Responses.—Allergy is defined as an altered reactivity of the tissues caused by the formation and deposit of specific antibodies.

If no history of previous exposure to the local anesthetic drug can be elicited, sensitization may have been caused by the administration of related substances, such as phenylalanine, tyrosine, or paraaminobenzoic acid, which is a component of the vitamin B group.

Allergic-type reactions manifest themselves primarily by skin eruptions, such as hives or angioneurotic edema. Other histamine-like reactions, as for instance bronchospasm and hypotension, also occur. However, the comparative rarity of allergic reactions must be emphasized again; and hence the overwhelming majority of cases in which fall of blood pressure occurs are due to vasomotor depression and not to allergy. Cullen states, and we agree with him, that 99% of all reactions to local anesthetic agents are not anaphylactic or allergic in nature unless accompanied with a skin reaction. One reaction that is undoubtedly allergic in origin and that is not too uncommon is that of contact dermatitis from the application of local anesthetic ointments. Their specificity has been proved by patch tests, and it appears that the presence of eczema increases the susceptibility to this reaction. Another example of contact dermatitis is that which has been known to develop in some dentists from repeated contact of their hands with local anesthetic drugs.

The rarity of allergic manifestations after injection of local anesthetic agents causes this type of reaction to assume a greatly subordinate role.

Hypersensitivity.—In hypersensitivity, toxic reactions of the usual pattern will occur from a minimal dose of a drug. We have already alluded to the comparative rarity of this phenomenon. Suffice it to restate that any of the previously mentioned reactions can thus occur with an average dose in a susceptible individual, simulating the conditions that would otherwise result had an absolute overdose been administered to a normal person.

Treatment is instituted on the basis of the predominant pathological manifestation.

Idiosyncrasy.—Idiosyncrasy is defined as an abnormal or unusual response to a drug, and may occur from very small doses. It is thus akin to hypersensitivity, varying from it in that the response may be of an unusual type.

Treatment, again, is along lines dictated by the predominant symptoms. The condition is very rare after local anesthesia.

REACTIONS NOT DUE TO THE LOCAL ANESTHETIC AGENT

Psychomotor Reactions.—A number of so-called reactions, incidental to the administration of a local anesthetic, cannot be attributed to the agent itself. That some of these reactions are psychogenic is demonstrated by those patients who faint at the mere sight of the needle or on account of the trauma of skin puncture before any solution has been injected. Is it not logical then to assume that a number of "reactions" on or after injection of the solution may not also be of the neurogenic or psychogenic type of shock? Sachs stresses the importance of the patient's mental attitude, his surroundings, and his confidence in the doctor as factors in his psychic reaction to the administration of a local anesthetic. Thus it becomes apparent that adequate psychic sedation is a matter of prime importance. Some authors advocate rather heavy premedication with barbiturates, amounting to almost basal narcosis.

Vasopressors.—Epinephrine is added to local anesthetic solutions in order to decrease the rate of absorption by vasoconstriction, thus prolonging the anesthetic action and diminishing its toxicity. A further advantage in its use is that it affords a relatively bloodless field, and hence it has been called a "physiological tourniquet." It is not required where cocaine is employed, as this drug has vasoconstrictor properties of its own. It has been said that there exists a synergism between epinephrine and procaine which increases the anesthetic effect per unit weight of the anesthetic agent. One explanation of this phenomenon is that epinephrine sensitizes the nerve endings to the local anesthetic drug. On the other hand, it has also been stated that procaine appears to sensitize to epinephrine.

Epinephrine is a potent sympathomimetic drug which in dilutions of even 1:50,000 causes a rise of blood pressure and an increase in pulse rate. It is contraindicated, therefore, in coronary disease, in which the increased load on the myocardium may lead to cardiac failure. One cubic centimeter of a 1:1,000 solution can precipitate an attack in angina pectoris patients. It should not be used in hyperthyroid patients or in vasolabile subjects. Convulsions have been described following its admin-

istration. It is contraindicated in local anesthesia of fingers and toes, as the intense vasoconstriction is known to have caused gangrene. Local cutaneous reactions of allergic type have been described by several authors, and Gordonoff postulates that death or severe reactions after procaine-epinephrine injections may be due to sensitization to epinephrine. His two cases, however, are unconvincing; in the first one the patient was of a markedly vasolabile constitution, and in the second case the procaine-epinephrine solution was given orally.

Maximum vasoconstriction can be obtained with relatively small amounts and dilute solutions (1:200,000), and any excess will only serve to increase toxicity of epinephrine without appreciably enhancing the vasoconstrictor action of the drug. Hence, the crude method of adding a few drops of epinephrine to the local anesthetic solution is to be condemned, as the resulting concentration may vary within some 200%. Waters suggests 5 minims of epinephrine 1:1,000 to each 100 cc. of procaine.

Toxic reactions to epinephrine manifest themselves by tremors, anxiety and nervousness, palpitations, precordial distress, tachycardia, increased rate of respiration, and a rise of blood pressure. Severer reactions may lead to acute cardiac dilatation, pulmonary edema, ventricular fibrillation, and death. Thus they closely resemble reactions due to the local anesthetic agents themselves, and it may be a matter of some difficulty to arrive at a decision in some cases.

Waters has drawn attention to the fact that tachycardia denotes an epinephrine reaction, whereas bradycardia would lead one to suspect a reaction due to the local anesthetic drug itself. As we have seen, cocaine poisoning is characterized by tachycardia; but as this drug is not usually combined with epinephrine, the question of a differential diagnosis does not arise. Waters furthermore states that when tachycardia accompanies the reaction from a synthetic local anesthetic agent, injection may be continued safely with a solution from which epinephrine has been omitted. When bradycardia points toward a reaction to the local anesthetic itself, he advises temporary interruption of the injection and the administration of 5 minims of epinephrine 1:1,000 intramuscularly, after which, when the signs and symptoms of the reaction have subsided, the injection may be completed. We are unable to agree with him on this point, and would recommend that once reactions have occurred the administration should be discontinued and some other anesthetic procedure substituted. Treatment is on symptomatic lines and must include oxygen administration.

Because of the toxicity of epinephrine, many substitutes have been investigated. Of these, cobefrin,® an isomer of epinephrine, is the most valuable. Bieter has stated that the drug has one-fifth the pressor action of epinephrine, but untoward reactions are both less frequent and less severe when they occur. A concentration of 1:20,000 to 1:80,000, according to the concentration of procaine, is recommended. However, Tainter and Throndson have shown, in well-controlled experiments, that cobefrin® does not offer any real advantage over epinephrine; indeed, they have demonstrated that local anesthetic solutions containing cobefrin® are potentially more dangerous to the circulation than those containing standard concentrations of epinephrine. Thus the question of cobefrin® versus epinephrine remains at least somewhat controversial.

SUMMARY

A new classification of reactions to local anesthetics is presented and the management of these reactions discussed.

As a prophylactic measure, an adequate history should be taken, with particular stress being laid on previous local anesthetics and possible complications or sequelae.

The patient should be adequately prepared for the procedure, both psychologically and by the administration of sedative drugs, barbiturates being the drugs of choice.

In the choice of the local anesthetic and the technique of its administration, attention must be paid to the patient's physical status, to correct dosage and concentration of the drug, to the rate of administration, and to the area in which the drug is to be injected.

A close watch must be kept for early premonitory signs of reaction, and steps must be taken to deal with severer reactions, should they supervene. In such cases the type of reaction must be correctly assessed and the appropriate treatment instituted at once.

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Wangensteen Suction in Surgery.—Probably nothing has done more to facilitate the recovery of individuals subjected to abdominal procedures than the routine use of gastro-intestinal suction in the immediate postoperative period. . . . As a result of irritation of the peritoneum regardless of the cause, there is a functional inactivity of the gastro-intestinal tract, which persists for varying periods of time according to the degree of trauma. In infections of the peritoneum, trauma to the peritoneum is prolonged and for this reason the associated adynamic ileus is of much more serious importance and significance than that which follows an operative procedure. . . . The length of time gastric suction must be maintained varies according to the degree of trauma, but generally does not exceed twenty-four to seventy-two hours. By careful auscultation of the abdomen, one can determine the return of peristalsis, and as soon as peristaltic sounds become active, the tube can be removed safely.

Although there are some indications for the use of a double tube, these indications in our hands have become less frequent as time passes. In any case, however, in which decompression of the lower intestinal tract is desired and obtained by means of the double tube, it is imperative that gastric suction be maintained likewise. . . . During the time that an indwelling gastric catheter is maintained and suction is applied, nothing is allowed by mouth, because otherwise large amounts of electrolytes will be washed out of the stomach by the gastric lavage. Obviously, the fluids and electrolytes removed by gastric suction must be replaced parenterally. If for any reason . . . prolonged gastric drainage is necessary, it is essential that potassium deficiency should be prevented by the administration of potassium intravenously.—Alton Ochsner, M.D., The Use of Wangensteen Suction in Surgery, *Minnesota Medicine*, October, 1951.

CORTISONE AND CORTICOTROPIN (ACTH) IN DERMATOLOGY

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Since the therapeutic introduction of cortisone and corticotropin (ACTH) in 1949,[1] their scope of application has spread widely. Among the diseases of interest to the dermatologist, disseminated lupus erythematosus and psoriasis were the first in which the effects of these hormones were reported.[2] Since then numerous other dermatological conditions have been treated, and although experience is still limited, it is expanding daily. This report will summarize the results and observations in a variety of dermatoses treated with cortisone or corticotropin or both.

DERMATOSES TREATED

Lupus Erythematosus.—In acute systemic lupus erythematosus cortisone and corticotropin have brought about dramatic symptomatic improvement in seriously ill patients. There is improvement in well-being and in weight. The acute episode may be terminated in so far as the fever, prostration, anorexia, articular pain, and lesions of the skin and mucous membrane are concerned. At times signs of serous involvement have been eliminated, but, for the most part, the visceral changes, notably signs of renal damage and cardiac lesions, have been unaffected.

The laboratory manifestations of the disease are little affected except for the leukopenia which usually disappears. The sedimentation rate is lowered somewhat in most cases, but in our experience it has continued to remain above normal. The reversed albumin-globulin ratio tends to be unchanged or even to become more abnormal; in one case, however, there was a return to normal during a clinical remission of six to eight weeks' duration, after which the patient went into a relapse and failed to respond to cortisone.

The remissions produced in acute lupus by adequate doses of the hormones are temporary, and clinical evidence of relapse is usually seen in two to eight weeks, occasionally longer. As the disease progresses, subsequent courses of therapy are less effective. In most of our patients with acute lupus erythematosus, the disease progressed to a fatal termination in spite of repeated courses of cortisone. One patient in whom peritonitis developed while corticotropin was being administered succumbed six months later of the debilitating effects of uncontrollable chronic infection in the peritoneal cavity. Practically no sign of lupus erythematosus was found at necropsy. In this and in other patients wound healing was unimpaired while they were under the influence of these hormones.

The effects of the hormones on the plasma electrolytes have been more marked in lupus than in other diseases we have treated, possibly because of the renal lesions which commonly are present in lupus erythematosus.

In cases of chronic discoid lupus erythematosus the results of administration of the hormones by injection have been unsatisfactory; occasionally slight benefit in the form of decrease in the erythema and in the size and induration of the plaques has been noted, but benefit could not be maintained with subsequent courses of even a total of 70 gm. of cortisone.

The topical use of cortisone in ointment and in solution in discoid lupus erythematosus resulted in temporary slight improvement in a few instances. No side effects have been noted in such instances.

Syphilitic Interstitial Keratitis and Keratoconjunctivitis of Acne Rosacea.—Cortisone in a suspension of 1 to 2% has been used locally in the acute phase of syphilitic interstitial keratitis with remarkable improvement in three cases and beneficial effect in another. The patients treated have had no recurrence of the interstitial keratitis as yet. Cortisone, given for the keratoconjunctivitis of acne rosacea, was of benefit in one case and not in another.

Scleroderma.—In several cases of scleroderma of the acrosclerotic type, cortisone was given in repeated courses, usually 100 mg. daily for varying periods.[3] In some of the longer courses (up to 42 days) the dosage was often decreased to 50 mg. daily in the latter part of the course. All the patients experienced some euphoria, plus a subjective sense of improvement and in the cases of short duration greater mobility of the fingers, wrists, and jaws. The symptoms referable to the joints were much decreased. Objective improvement of a measurable degree, in motion of joints or in increase of skin temperature and peripheral circulation, was slight. The subjective improvement lasted for several months after a single course in one case; it was of shorter duration in the others, but subsequent courses regularly produced increasingly longer periods of partial relief. One patient in the series died of an undetermined type of infection characterized by a morbilliform eruption, encephalitis, and terminal bronchopneumonia. The symptoms of this condition developed at the end of a course of cortisone and failed to respond to treatment with antibiotics.

Three patients had biopsies before and after treatment with cortisone; the dermatosclerosis of only one

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1. Hench, P. S.; Kendall, E. C.; Slocumb, C. H., and Polley, H. F.: The Effect of a Hormone of the Adrenal Cortex (17-Hydroxy-11-Dehydrocorticosterone; Compound E) and of Pituitary Adrenocorticotrophic Hormone on Rheumatoid Arthritis: Preliminary Report, Proc. Staff Meet., Mayo Clin. **24**: 181-197 (April 13) 1949.

2. Brunsting, L. A.; Slocumb, C. H., and Didcot, J. W.: Effects of Cortisone on Acute Disseminated Lupus Erythematosus, A. M. A. Arch. Dermat. & Syph. **63**: 29-52 (Jan.) 1951; abstracted, Proc. Staff Meet., Mayo Clin. **25**: 479-482 (Aug. 16) 1951. O'Leary, P. A.; Montgomery, H.; Brunsting, L. A., and Kierland, R. R.: Transactions of the Minnesota Dermatologic Society, Arch. Dermat. & Syph. **62**: 596-614 (Oct.) 1950. Baehr, G., and Soffer, L. J.: Treatment of Disseminated Lupus Erythematosus with Cortisone and Adrenocorticotropin, Bull. New York Acad. Med. **26**: 229-234 (April) 1950.

3. Hines, E. A., Jr.; Wakim, K. G.; Roth, G. M., and Kierland, R. R.: The Effect of Cortisone and Adrenocorticotrophic Hormone (ACTH) on the Peripheral Circulation and Blood Pressure in Scleroderma, J. Lab. & Clin. Med. **36**: 834 (Nov.) 1950. Kierland, R. R., and Hines, E. A., Jr.: Cortisone and Adrenocorticotrophic Hormone (ACTH) in the Treatment of Scleroderma, Arch. Dermat. & Syph. **64**: 549-554 (Nov.) 1951.

patient showed significant pathological change, and this was not of marked degree. A single course of corticotropin was given to each of the other two patients with acrosclerosis. One received 80 mg. daily for 10 days and the other 75 mg. daily for 16 days. Neither received any appreciable benefit. A possible explanation for this failure may have been the fact that the corticotropin was given only once daily in one case and twice daily in the other.

Dermatomyositis.—In this condition our initial experience with three patients given cortisone was discouraging. However, one additional patient, a middle-aged woman who had had symptoms for nine months, derived a marked degree of improvement, as noted by decrease in the cutaneous edema and partial restoration of muscle function, which has been maintained for four months on a daily dose of 50 mg.

Repeated courses of cortisone of two to three weeks' duration were given a girl of 10 years with the acute form of the disease, to a girl of 17 with a subacute form, and to a man of 34 in the chronic phase. The dosage levels were 200 mg. daily in the latter two cases and 100 mg. daily for the girl 10 years. In the second and third cases there was no appreciable change in the muscle strength. The acute dermatomyositis progressed to a fatal outcome four months after the last treatment with cortisone. The subacute condition remained in status quo for seven months after the last dose of cortisone. In the case of chronic disease there was a gradual improvement in strength after the first of two courses; this continued for several months. The second course did not increase the rate of improvement. The patient returned to work as a truck driver three months after the last course of cortisone, but still had diminished strength and mild erythema of the face. His improvement could not be attributed to the hormone, since a similar change is seen as a spontaneous occurrence in cases of dermatomyositis.

During administration of the hormone there was a tendency in all the cases for excretion of creatine to drop somewhat from the abnormally high levels, but this effect was temporary. No other significant changes were noted.

Erythema Nodosum and Urticaria.—In erythema nodosum the use of either hormone resulted in the rapid involution of the painful joints, tender cutaneous nodules, and decrease of fever but did not affect the elevated sedimentation rate. On withdrawal of the hormones symptoms tended to recur within a few days. When the disease was burned out, discontinuance of use of the hormones was not followed by new crops of nodules. The effect may be compared with that seen in cases of rheumatic fever in which the hormones have been used to suppress the damaging inflammatory lesions while the disease process runs its usual course of several weeks.[4]

In urticaria of the acute type, such as that due to penicillin and occasionally aureomycin, the use of corticotropin was followed (in a few to 36 hours) by permanent relief. Doses of 25 mg. three or four times on the first day followed by rapid decrease in the dose appeared to be satisfactory. Treatment was tapered off during the course of four to five days in most instances. In one case of chronic urticaria of nine-weeks' duration, there was no benefit from these hormones. Urticaria of transient nature was produced by use of corticotropin but not by injection of cortisone in one patient with mild pemphigus foliaceus.

Pemphigus Vulgaris.—Both hormones when used in adequate doses frequently produce healing of denuded areas and suppress the formation of new bullae. They also improved the general health of the patients. With corticotropin, adequate dosage has appeared to be 75 mg. or more daily. With cortisone 200 mg. daily for several days was adequate as the beginning dosage. After control of lesions doses were reduced to the lowest effective level for maintenance. The optimal dosage for maintenance has not been well established with corticotropin because of variability in response and since courses were generally short, but with cortisone it varies between 50 and 100 mg. per day.

No lasting effect was noted after cessation of treatment; relapse was seen in three to seven days in all cases, so it appears that the optimal maintenance dosage must be established in each case. How long use of these dosages can be continued has not yet been determined. A fatal outcome was not prevented by use of cortisone in one case of severe pemphigus vulgaris in which the initial response was adequate. Under reduced dosage new lesions developed, and the patient gradually failed in spite of supportive therapy.

In general, it appears that cortisone and corticotropin are effective in inhibiting the development of new lesions, improving the well-being of the patient, and producing remissions of varying duration, but the most desirable maintenance dosage and the duration of treatment must be determined for each patient.

Pemphigus Foliaceus.—The results of treatment of the foliaceus type of pemphigus have been more encouraging than in the vulgaris form, although variability of response was noted also. Under the administration of either corticotropin or cortisone the blistering ceased and the exfoliative process was reduced in all cases. The beneficial effects were prolonged after cessation of treatment. It appeared that early pemphigus foliaceus responded more completely and rapidly than that of long-standing and widespread involvement.

Psoriasis.—Patients with psoriasis and psoriatic arthritis were given the hormones because of the presence of the arthritis, since it has been found that corticotropin and cortisone have but little effect on the skin lesions of psoriasis. The psoriatic arthritis showed the same measure of improvement that is seen in rheumatoid arthritis.

Lymphoblastoma.—Corticotropin was used in one case of mycosis fungoides in which intractable pruritus, as well as nodular infiltrations in the skin, was present. The pruritus decreased while corticotropin was given, but the corticotropin had little visible effect on the tumors. The pruritus recurred after cessation of therapy, but the patient was given much needed relief for periods of 12 and 6 days on two occasions. The only value was in symptomatic relief.

In a case of primary cutaneous Hodgkin's disease with many small nodules in the skin, corticotropin produced a definite reduction in the nodular infiltration and also

4. Barnes, A. R.: Effects of Cortisone and ACTH in 14 Patients With Acute Rheumatic Fever, Proc. Staff Meet., Mayo Clin. **25**: 478-479 (Aug. 16) 1950.

relieved the mild to moderate itching. Later in the course of therapy, which lasted 25 days, new nodules appeared around the periphery of the old lesions. The patient did not respond to roentgen therapy before use of corticotropin and responded moderately to oral use of triethylene melamine after corticotropin therapy. The amounts of corticotropin given to this patient were 100 mg. daily for 15 days, 50 mg. daily for 6 days, then 40 and 30 mg. daily for 3 and 4 days, making a total of 2,040 mg.

Atopic Dermatitis and Generalized Neurodermatitis.—For the purposes of this discussion we have included under atopic dermatitis those patients whose eczema began in infancy or early childhood and persisted or recurred throughout their later life and whose background showed hay fever and asthma. The generalized neurodermatitis group included cases with widespread, usually generalized, dermatitis, the duration of which was months or years, but which had first appeared in adult life (ages 26 to 64). Most of these patients showed no previous or family background of hay fever or asthma. The majority of patients in both groups were given corticotropin in doses of 60 to 100 mg. daily, usually with dosage reduction after improvement started.

In the atopic group the response was fairly uniform and consisted of considerable reduction in the pruritus. In some cases there was almost complete relief. The lichenification gradually diminished during courses varying in length from four days to three weeks. It was felt that the over-all improvement experienced by the patients was hastened and increased by the interruption of the pruritus. The majority of patients experienced relapse in varying periods of time after withdrawal of corticotropin, and no permanent effect on the basic disease could be ascribed to the hormones.

In the generalized neurodermatitis group the effects of corticotropin therapy were similar in that the pruritus was often relieved and the patient's skin seemed to improve more rapidly. Some patients with exudative lesions experienced a drying effect. A few patients, however, obtained little or no benefit from corticotropin therapy at levels of 60 to 100 mg. daily. One patient who received cortisone was unimproved. Relapses were noted after cessation of treatment in this group also, but, in general, use of the hormones (mainly corticotropin) seemed worth while, although not quite as valuable as in the atopic group. Patients with neurodermatitis have a tendency to become dependent on the hormone; accordingly, it is suggested that the treatment be reserved for patients with intractable symptoms and that the courses of treatment be of short duration.

GENERAL CONSIDERATIONS

The physiological effects of cortisone and corticotropin have been thoroughly discussed by others [5] and consist mainly of the clinical and metabolic alterations seen in Cushing's syndrome. These are "rounding of the facial contour, hirsutism, acne, keratosis pilaris, muscular weakness, edema, amenorrhea, cutaneous striae, mental depression, impairment of carbohydrate tolerance, negative nitrogen balance, increased excretion of corticosteroids in the urine, and hypochloremic hypopotassemic alkalosis." [5] In addition, changes in the psyche were noted.

Few of our patients showed any of these alterations to a significant degree. Some of those who had disseminated lupus erythematosus had marked degrees of fluid retention and hypopotassemia. For the majority of patients with dermatosis the courses of treatment were short and significant physiological alterations were seldom seen.

In addition to Cushing's syndrome, certain other changes were noted. The commonest of these, which appeared in the majority of cases, were changes affecting the psyche. Mental stimulation and euphoria were frequent; patients felt "full of pep" and much more active; their appetites increased to abnormal degrees, and some were unable to sleep well. Anxiety and agitation also were noted, as was a tremor of the hands. A few patients experienced slight and transient changes in their mental stability; two patients became frankly psychotic for a brief period, but recovered completely in two to four weeks after withdrawal of treatment. Both patients in whom the latter complication developed were receiving 200 mg. of cortisone daily. One had psoriasis and the other disseminated lupus erythematosus.

Occasionally thrombophlebitis develops in patients receiving cortisone.

Cortisone tends to suppress the symptoms and surface signs of infectious diseases, and this action may prevent the recognition of unexpected infections in patients with various dermatological conditions. We have encountered this masking effect in a pneumococcic septicemia with diminished febrile response; subcutaneous abscesses with no erythema and little pain; poorly localized peritonitis followed by general sepsis; miliary tuberculosis recognized at necropsy in a case of disseminated lupus erythematosus; and finally a rapidly fatal infection of undetermined cause (questionably virus) characterized by a morbilliform eruption and encephalitis in a case of scleroderma. The seriousness of the development of a superimposed bacterial or virus infection during a course of hormone therapy cannot be overemphasized. Recent reports indicate that this is particularly true in cases of tuberculosis, both active and latent, in which the hormones may allow an exacerbation of the disease.[6]

Indications for Use of the Hormones.—There are no absolute indications for use of cortisone or corticotropin in dermatological conditions, and there is little evidence that the effect of the hormones is curative; however, in certain diseases, such as fulminating lupus erythematosus or pemphigus, their use may be temporarily lifesaving. In other less serious conditions they may have beneficial effects of varying degrees.

Contraindications.—These are dictated largely by the physiological effects of the hormone in conditions in which these effects may aggravate already existing pathological states. The following conditions prohibit or restrict the use of the hormones; however, exceptions may be made if the need is sufficiently great and caution is used:

1. The presence of edema or a predisposition to retention of fluid, especially congestive heart failure and

5. Sprague, R. G.; Power, M. H.; Mason, H. L.; Albert, A.; Mathieson, D. R.; Hench, P. S.; Kendall, E. C.; Slocumb, C. H., and Polley, H. F.: Observations on the Physiologic Effects of Cortisone and ACTH in Man, Arch. Int. Med. **85**: 199-258 (Feb.) 1950.

6. ATS Warns on ACTH and Cortisone Effect on Tuberculosis: Urges Tests, Bull. Nat. Tuberc. A. **37**: 4 (Jan.) 1951.

nephritis, is a contraindication. The renal damage in disseminated lupus erythematosus is an exception, but the need for close observation is greater than usual because of the danger of electrolyte imbalance.

2. Newly acquired or latent infection, especially tuberculosis, also contraindicates use of these hormones.

3. Psychosis or marked instability to stress situations is another contraindication. Rome and Braceland [7] expressed the opinion that the administration of cortisone or corticotropin to a patient who has previously proved unstable in a situation of stress is likely to cause potent stress and recurrence of the instability, sometimes to the point of psychotic reaction.

4. Hypertension may be aggravated, but to date none of our patients have had hypertensive disease.

5. Diabetes mellitus contraindicates the use of these hormones, since they are known to increase the severity of the diabetes and to reduce the sensitivity to insulin. None of the patients in our series had diabetes.

Recommended Dosage of Cortisone.—In severe conditions, especially when patients are febrile, 300 mg. may be given the first day in two injections several hours apart. Subsequent doses of 100 to 200 mg. daily (the latter in divided doses) may be employed until improvement is noted, at which point doses of 50 to 100 mg. daily are given for variable periods to maintain improvement. In most of our cases injections were used, but more recently cortisone in tablet form has been used in some cases after the maintenance stage was reached.

Recommended Dosage of Corticotropin.—This hormone is usually given in divided doses of 15 to 25 mg. at intervals of six to eight hours. For severe conditions 100 mg. may be given daily for one to several days, then smaller doses are used. These may vary from 50 to 80 mg. daily down to as little as 10 mg. in one injection a day. For certain patients these small doses when given at bedtime may be sufficient to reduce nocturnal pruritus.

No specific rules of dosage have been established as yet because of the variabilities in response as well as individual differences in the manifestations of the undesirable physiological effects. These variables necessitate individualization in decisions regarding dosage. The optimal dosage has not been established, especially in regard to duration. The full effects of long-term administration have not been fully explored; hence, it is believed wiser to pursue a conservative course with small doses particularly in the treatment of the nonfatal types of skin disease.

COMMENT

It is apparent from the previous remarks that remissions of varying duration may be obtained in a variety of conditions which the dermatologist is called on to treat. Yet, great as the action of these hormones is, they do not provide cures; rather they appear to buffer or to shield the target tissues from the provoking agent and because of this suppress many of the serious disabling symptoms of the disease.

We wish to reemphasize that corticotropin and cortisone are powerful in their physiological actions and, hence, cannot be administered promiscuously or without full knowledge of their effects. While physiological side effects are usually transient and reversible, such reversibility does not detract from the importance or potential seriousness of such effects. In other words, it is recommended that these hormones should not be administered haphazardly or for reasons of "something or nothing more to do." We are convinced that too many times these agents have been given for insufficient reasons and without knowledge of their properties and potentialities.

Mention has been made of the action of these hormones on intercurrent infections, those in which the clinical evidence of infection is minimal or absent while the infection goes on unhindered. In certain instances intercurrent infections of serious or fatal nature have developed, the symptoms of which were concealed while the patient was under the influence of the hormones. Patients have succumbed to septicemia, miliary tuberculosis, peritonitis, hemorrhagic pancreatitis, perforated duodenal ulcers, and encephalitis. Reports are now appearing in the literature citing other similar experiences, and warning is given against the use of corticotropin and cortisone during or shortly after infective states. Corticotropin or cortisone should not be given to patients with acute or chronic infections due to Mycobacterium tuberculosis, staphylococci, streptococci, meningococci, pneumococci, and others. Cortisone seems to inhibit those factors which are prominent in the cellular response to disease, but the responsible organism is uninhibited. If infection supervenes while a patient is under treatment with cortisone or corticotropin, early treatment with antibiotics in adequate dosage is most important. If the infection does not produce severe organic stress, the administration of the hormone should be discontinued.

SUMMARY AND CONCLUSIONS

Cortisone and corticotropin (ACTH) have been administered in patients with acute and chronic lupus erythematosus, psoriasis, scleroderma interstitial keratitis (locally applied cortisone used), lymphoblastoma, urticarial and eczematous states, pemphigus vulgaris, and pemphigus foliaceus. From an analysis of our results these hormones are recommended for the relief of symptoms but not with hope of cure. Worth-while results have been obtained in cases of acute lupus erythematosus, early scleroderma, pemphigus vulgaris, pemphigus foliaceus, psoriatic arthritis, certain forms of exfoliative dermatitis, drug and serum reactions, and for the intense pruritus of some eczematous states. Syphilitic interstitial keratitis is influenced remarkably by the local instillation of 1 to 2% suspension of cortisone. These hormones are not considered efficacious at this time for uncomplicated psoriasis, the usual eczematous patient, or for lymphoblastoma of the skin. In all cases an effort should be made to find the minimal maintenance dose that provides suppression and relief of symptoms. Variation in reaction of individual patients to these hormones prohibits a statement as to duration of treatment. These hormones should not be administered promiscuously, without knowledge of their physiological effects and dosage and of the influence of infection on those receiving such treatment.

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7. Rome, H. P., and Braceland, F. J.: Use of Cortisone and ACTH in Certain Diseases: Psychiatric Aspects, Proc. Staff Meet., Mayo Clin. 25: 495-497 (Aug. 16) 1950.

PSYCHOLOGICAL RESPONSE TO CORTICOTROPIN, CORTISONE, AND RELATED STEROID SUBSTANCES

PSYCHOTIC REACTION TYPES

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In previous reports [1] we have summarized the psychological responses which attend the administration of corticotropin (ACTH), cortisone, and other related steroids. It has been indicated that these responses are but one aspect of the widespread change induced by these agents—that the total adaptation of the human organism is altered by a multiplicity of factors. These relate to the direct and indirect effects on both the internal and external environments. The rapidity as well as the degree of change produced constitutes a stress which in turn mobilizes resources characteristic of the patient. Hence, the clinical form which the response takes is determined in large part by the habitual organization of the patient's personality; most particularly by the preferred way in which he has responded to stress in the past.

The descriptive aspects of the range of responses noted have been grouped into four clinical grades. Grade 1 is comprised of deviations in mood, usually in the direction of elevation. There are commensurate changes in the patterns of thinking and behavior which reflect these mood alterations. Grade 2 differs from the grade 1 response only in a quantitative sense. Grade 2 responses are detected more readily merely because they are more pronounced. It is for this reason that euphoria has been reported to be typical.[2] The grade 3 response subsumes what are typically the psychoneurotic adaptations to this stress. These adaptations, therefore, comprise a gamut of clinical forms clinically indistinguishable from the usual psychoneurotic reaction types. The grade 4 response designates the psychotic reaction types which are encountered occasionally. These also vary clinically in accordance with the organization of the patient's previous personality.

The striking deviations in mood, thought processes, and behavior which distinguish psychotic reactions from all others, furnish substantial clues to a better understanding of some of the underlying physiological and psychological dynamics responsible for these reactions.

There have been suggestions [3] that some psychiatric disorders (including some of the psychotic reaction types) are related to the altered function or the direct and indirect effects of the anterior pituitary-adrenal cortical activity. If these hypotheses are valid, the nature of the events which result in the occurrence of a psychotic reaction following the administration of these hormones is of considerable significance.

However, many of the hypotheses concerning the etiology of psychiatric disorders which have been advanced are partisan in the sense that they tend to ascribe the resulting clinical syndrome to more or less "specific" factors which arise either in the internal or the external environments. It would appear that such conclusions tend to oversimplify the determinants of the enormous complexity of human function. Halliday,[4] in a discussion of some of the principles of psychiatric etiology, emphasized the need to consider the resulting pattern of morbid reaction a consequence of a multiplicity or synergy of causes. Our observations tend to support his thesis.

Recent speculations on the theory of control and communication underscore this hypothesis of interrelated causes.[5] Essentially, the operative principle seems to be that the stability and integrity of the human organism is maintained by the harmonious integration of a series of interdependent buffer-like systems. In addition to specific, more or less independent functions, under certain conditions each system is capable of provoking extensive changes in other systems. An operation analogous to that of a feed-back type of control is suggested as a possible explanation of the dynamic relationships which link otherwise autonomous parts—hence, the error in limiting attention to one element of such a complex without regard for its influences and the consequences of such influences on all the other components.

As this operation applies to the psychiatric phenomena which attend the administration of these hormones, it

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4. Halliday, J. L.: Psychosocial Medicine: A Study of the Sick Society, New York, W. W. Norton & Company, Inc., 1948, pp. 15-41.

5. Wiener, N.: Cybernetics or Control and Communication in the Animal and the Machine, New York, John Wiley & Sons, Inc., 1948. Wiener, N.: The Human Use of Human Beings; Cybernetics and Society, Boston, Houghton Mifflin Company, 1950.

appears that each psychological and physiological factor acts as a vector which has the dimensions of magnitude and direction. The resultant clinical syndrome is a unique composite of these many forces. In the final analysis, an extensive knowledge of the specific operations of these many forces in each patient is necessary in order to identify accurately their precise role. The grade 4 psychotic reactions, because of their dramatic characteristics, provide the most striking illustrations of these dynamic forces in operation.

There are certain features common to the reactions of all patients in whom these responses have occurred:

1. The psychological responses vary widely in degree, duration, and clinical form. The clinical form is determined in large part by the previous organization of the patient's personality.

2. The psychotic reactions tend to occur in patients who have made marginal psychological adjustments in the past.

3. The grade 3 and 4 responses usually are associated with profound change in the underlying physical disease. This does not necessarily imply a cause-and-effect relationship; rather, each seems to be reflective of a change in the level of total adaptation brought about by these agents.

4. As yet, there is no consistent correlation between the demonstrable metabolic changes produced by these hormones and the psychiatric syndrome which may be associated. However, in a number of patients with various diseases there has been an intensification of the psychiatric symptoms which seems to coincide with rather marked shifts in the electrolyte balance.

5. The fact of sudden or great change itself, which implies a different level of adaptedness rather than a specific kind of change, seems to be an important denominator. A given mode of adaptation seems to depend more on the relative integration of all the component parts of the internal and external environments than it does on the absolute level of any one part. What ordinarily would be a wide deviation from the norm in any component can be tolerated provided that it is within certain outside limits and is brought about within a sufficiently long period of time to permit accommodation. Thus, vulnerability to stress, from a psychiatric standpoint at least, seems to depend not so much on a specific factor in the internal or external environments, but rather on the residual capacity of the organism to tolerate stress of any kind at that time.

6. The change from one dynamic level of adaptedness to another, even though it is in the direction of a statistical norm, has not only physiological significance but also considerable psychological (conscious and unconsciously symbolic) meaning. In this connection, the sudden "cure" of a chronic illness, for example, is fraught with an equally significant loss of the secondary psychological gains of that illness. This is a stress as important, for example, as a decrease of 50% in the concentration of serum potassium in the precipitation of a grade 4 response.

REPORT OF CASES

The following cases illustrate the nature of the influences which appear to be important factors in the development of the grade 4 psychotic responses.

CASE 1.—Marked catatonic excitement developed in a single, white, male theological student, 26, with a profound classical catatonic schizophrenic stupor of three-months' duration after receiving 1.3 gm. of cortisone. Treatment was terminated after he had received a total of 2.2 gm. of cortisone over a 15-day period because of extreme progression of the almost unmanageable excitement which ensued. During this time fluid retention had developed, as well as some other changes characteristic of hypercorticalism. Electroshock therapy not only terminated the episode of excitement, but also induced a complete remission of symptoms which, to the time of this report, had been maintained for two years.

CASE 2.—A single, white woman, 19, with acute disseminated lupus erythematosus was treated with 3.8 gm. of cortisone. Except for a period of four days, when her daily dose was 100 mg., she received 200 mg. of cortisone daily. Prior to the development of the disease she had been well except for an obsessive-compulsive-ruminative neurosis of mild degree. She had received psychiatric treatment for a brief time elsewhere. Her problem was essentially a neurotic one, manifested by moderately intense compulsive-ruminative features: aloof, self-absorbed behavior and rather typical sexual conflicts about which she had much anxiety and guilt. Associated with cortisone therapy was a fulmination of these manifestations of her psychological conflicts to the point where closed-ward supervision was necessary. During the acute phase her psychological response was descriptively that of a paranoid-schizophrenic reaction. This acute response subsided within several weeks, during which time she received daily psychotherapy and sedation. A second course of cortisone (2 gm.) was given when the systemic signs of disseminated lupus erythematosus again became evident. The grade 4 psychological response which had been observed previously was again exacerbated, although on this second occasion the intensity seemed to be moderated somewhat by the sedation and psychotherapy she received. Seven days after the use of cortisone was stopped, the patient died. For one week prior to this time she had evidenced less anxiety and concern, less preoccupation with the religiosity which had been characteristic of her ruminations, and less somatic preoccupation.

CASE 3.—A married, white farmer, 36, with widespread psoriasis and painful, somewhat incapacitating psoriatic arthritis received 2.2 gm. of corticotropin. In addition to the development of mild evidence of hypercorticalism, he became extremely overactive, tense, preoccupied with the delusions that he had died, had been crucified, and was God. He was disoriented as to time, place, and person, and experienced auditory and visual hallucinations. His acute psychosis, which descriptively was a schizophrenic one of the paranoid variety, subsided spontaneously after 10 days of the usual closed-ward supervision. His background revealed considerable psychological conflict which had resulted in a lifelong schizoid adjustment. He had always been shy and withdrawn: an intensely insecure person who felt that his psoriasis was a direct consequence of childhood masturbation. At the time of this writing the patient had been seen at regular intervals for a year since his discharge; the psoriasis had completely disappeared; the arthritis was greatly ameliorated, and his psychological adjustment was on a nonpsychotic level, at least as good as it was prior to treatment.

CASE 4.—A married, white, successful businessman, 49, with three children presented the picture of a reactive depression of moderately intense proportions. His background revealed that he "was always an emotional person." He described himself as being shy, passive, and easily moved to tears by emotionally stressful experiences. On more detailed inquiry, it was evident that from childhood he had been a dependent, insecure person who compensated for feelings of inadequacy and inferiority by being overly scrupulous and overly conscientious and by hard work. For many years he had invested a disproportionate concern in his physical person and the function of his various body parts. He described his typical response in this regard by saying he "was always knocked down by illness."

For a period of 15 months before the onset of his present illness he had had various minor physical symptoms, which culminated in his being hospitalized in his home community after a vacation. Allegedly he had contracted a gastrointestinal infection, to which were ascribed his symptoms of diarrhea, weakness,

fatigue, anxiety, and loss of weight. During the physical investigation it was discovered that he had diabetes mellitus of a mild grade. He was treated with various medications, among which was cortisone. Presumably he received 1,500 mg. of cortisone over a period of five days.

The relevant psychiatric findings on his examination at the clinic were those typical of a reactive depressive patient. He was tearful, anxious, and greatly concerned about the possible relationship between diabetes mellitus and mental illness. The only significant feature other than those previously mentioned was that after the first dose of cortisone he had felt stimulated. This salutary experience was rapidly converted into the unpleasant one of depression, preoccupation, tension, and an unsuccessfully controlled emotionality. Despite the subsequent rather traumatic experience of laparotomy for a suspected malignant lesion, the patient's acute affective disorder subsided spontaneously.

CASE 5.—In a white widow, 63, with a background of severe headaches of 13-years' duration, a hypomanic reaction with paranoidal coloring developed after the administration of 400 mg. of cortisone. Her background indicated a profound psychoneurotic adjustment of at least 25-years' duration. During these years she had been tense, overactive, demanding, and perfectionistic. At various times her psychological adjustment to her conflicts decompensated, and symptoms developed which descriptively were those resembling the symptoms of conversion hysteria. On past occasions these had been verified by examinations at the Mayo Clinic. Such complaints as "blindness," "circulatory trouble," "heart disease," and "confusion spells" had been investigated extensively without revelation of a demonstrable physiological basis.

The cortisone the patient received had been given for the purpose of offsetting the effects of a previously induced sensitivity to histamine. After four-days' therapy in which she received 100 mg. of cortisone daily, there developed marked insomnia, pressure of speech and thought, flight of ideas, labile affect, vivid dreams and phantasies, suspiciousness, irritability, and ideas of reference and influence. The clinical psychiatric picture was that of hypomania with paranoidal ideation. Forty-one days after the cessation of cortisone therapy the patient had recovered sufficiently from both her physical and mental symptoms to be discharged from the hospital to receive more definitive psychiatric treatment elsewhere. A follow-up report indicated that she was completely asymptomatic about one month later.

COMMENT

The occurrence of a certain percentage of psychotic reactions as a complication of some of the diseases for which these hormones are administered is to be expected. The effects of periarteritis nodosa and acute disseminated lupus erythematosus on the central nervous system, for example, are well known. Then, too, patients with such diseases as psoriasis,[6] chronic ulcerative colitis,[7] gout,[8] and various allergic disorders [9] are thought to be more susceptible to the development of psychiatric complications than other persons. Patients who have Addison's disease similarly show a high incidence of psychological changes.[10]

According to Lemkau and his co-workers,[11] "The combined incidence for all forms of psychosis and psychoneurosis—excluding the disorders of advanced age but including epilepsy—appears to be about 20 per 1,000 individuals living through the age period of susceptibility." It would appear that the number of frank psychoses and psychoneuroses which is encountered after treatment with these hormones exceeds the expected frequency of occurrence of these reactions. In qualification of the foregoing, it must be said that this is an impression which needs demographic verification.

The data with which perhaps these phenomena may be compared derive from reports and observations on the occurrence of gross psychiatric disturbances among patients with Cushing's syndrome.[12] Soffer [13] pointed out that "in occasional instances these alterations are profound and disturbing enough to suggest the more serious psychoses." He stated that depression is most commonly noted and "occasionally mania and excitement and periods of paranoid confusion." Rimbaud and his associates [14] mention the occurrence of confusing psychomotor agitation. Oldenberg,[15] Huddleson and McFarland,[16] Hoff and Shaby,[17] Sarradon,[18] and Murray and Simpson [19] also have described the effects and the close relationships between adrenal cortical function and profound psychological changes. We have made similar observations in a series of patients who had verified Cushing's syndrome, and these will be reported elsewhere.

Although it is evident that there is a considerable difference between (1) the florid, metabolic state which results from adrenal cortical hyperplasia or tumor and (2) the hypercorticalism produced by the purposeful administration of these hormones, the difference is only a matter of degree and duration. It would appear that the rate at which the effects of hypercorticalism are produced, as well as the magnitude of the changes brought about, are the most significant determinants of the ultimate stress which is imposed. In keeping with this hypothesis are the observations of an unexpectedly high incidence of marked psychological reactions, including psychosis which is associated with other conditions (such as hypothyroidism and hyperthyroidism,[20] hypoparathy-

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roidism and hyperparathyroidism,[21] Addison's disease,[13] and diseases of the pituitary gland [22]).

Thus, it would appear that an induced hypercorticalism evokes a fundamental reaction—a stress, which mobilizes physiological as well as psychological resources. The dynamic equilibrium which results is a different level of adaptedness than that which constituted the pretreatment steady state. The capacity to adjust to this transition in turn is a function of many factors, those in the patient's present and past life as well as those in his internal and external environments. Consequently, there is a wide range of possible reactions which are reflected in the different clinical psychiatric syndromes which appear.

In the light of this potential complication to the treatment of certain diseases with corticotropin, cortisone, and possibly other hormones, it is especially necessary for the clinician to be thoroughly acquainted with all the component adaptative capacities of the patient he is treating.

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TRANSIENT SYNOVITIS OF THE HIP JOINT IN CHILDREN

REPORT OF THIRTEEN CASES

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A fairly common cause of painful hips in children is the condition variously known as transitory arthritis of the hip joint, transitory coxitis, coxitis serosa seu simplex, acute transient epiphysitis, and transient synovitis.

It is now felt that the term transient synovitis most aptly describes the condition, because the pathology seems to lie within the synovial membrane of the hip joint and to be excluded from the other structures within the hip. The malady is of interest, not because it is a disabling condition, but because of the difficulty encountered in differentiating it from more serious diseases of the hip, such as tuberculosis, osteomyelitis, or Legg-Perthes' disease.

Literature on the subject is rather scarce, only a few articles being found. Belmonte,[1] reporting on the condition in 1931, stated, "It is wonderful how the functional disturbance completely disappears in several days, and after ten to twelve days, all complaints depart." Bradford and Lovett [2] postulated that the diagnosis of synovitis of the hip should not be made unless the symptoms subside within a few weeks and recovery is permanent.

Butler,[3] in 1933, reported on a series of 25 cases of conditions which he classified as "observation hips." In 19 of his cases the condition proved to be some form of transitory arthritis with complete return of function. The roentgenograms in these cases showed no abnormalities and no definite cause for the condition was found. He concluded that a transitory arthritis in the hip joint in children without roentgenographic changes is common and frequently is diagnosed wrongly as tuberculosis.

Finder,[4] in 1936, reported 22 cases and stated, "In transitory synovitis of the hip joint, the synovitis constitutes the entire disease, but in other hip joint lesions, the synovitis may merely represent the point of departure into any one of several disorders of the hip."

Miller,[5] in 1931, described a condition of the hip which was similar in many respects to transient synovitis. He reported 77 cases and designated the condition "acute transient epiphysitis." He ascribed the condition to the lodging of infectious infarcts or pyemic plugs in the epiphysis, more commonly on the metaphyseal side of the epiphyseal line but occasionally on the epiphyseal side, and to the formation of focal abscesses. Miller felt that this was secondary to a focus of infection elsewhere in the body, and in 80% of his cases the condition was associated with diseased tonsils. Furthermore, he was able to demonstrate roentgenographic changes in the neighborhood of the epiphyseal line. In this condition the duration of the disease was a few weeks to a few months. It would appear then that the difference between the two conditions is that the pathological changes actually occur in the region of the epiphyseal line in the one case, which is possibly metastatic in character, while in transient synovitis the pathology is localized to the synovial membrane, probably on the basis of a toxicity or hypersensitivity reaction to some focus of infection elsewhere in the body.

Lucas,[6] in 1948, discussed the symptoms, etiology, and differential diagnosis of transient synovitis. The etiology of the condition is obscure. A small percentage of the cases have a history of trauma. Both Butler and Finder feel that an underlying, nonspecific infection is the likelier cause. This infection may be due to an allergic hypersensitivity to a focus of infection elsewhere in the body, a low-grade infection entering the blood stream and localizing in the joint, or a metastatic infection from some other focus in the body and the actual lodging of bacteria in the synovium.

Allergic conditions, such as asthma, bronchitis, rhinitis, and hay fever, and infected foci, such as the tonsils, teeth, and middle ear, can be causative. The condition

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has been reported as a complication of such diseases as measles, influenza, typhoid, pneumonia, and scarlet fever.

It appears to affect primarily children below 10 years of age. Finder reports 5.4 years as the average age in his cases. Boys and girls appear to be affected in about the same ratio, though Butler found that boys predominate over girls in the ratio of 17:5. No definite racial predisposition has been noted, though I have seen few cases among Negroes.

The onset of the condition appears to be insidious in about as many instances as it is acute. Symptoms usually last one to a few days, though in some cases they may be present for several weeks.

The symptoms most often encountered are pain and limping. The pain may be mild or so severe that the child refuses to bear any weight on the affected extremity. Also, the pain is often present in the thigh or knee and, rarely, in the lower leg, radiating from the hip. The degree of limping may range from mild to severe. Clinically there is demonstrable muscle spasm of all groups about the hip. Palpation anteriorly over the head of the femur will elicit tenderness. The child holds the leg in the position of comfort or flexion and adduction. All ranges of motion are resisted and limited, particularly abduction and internal or external rotation. Extension of the leg is very painful. Trendelenburg's sign frequently is present. A low-grade temperature is often present, varying from 99 to 101 F. Rarely, the temperature may go as high as 103 F.

The laboratory data are often of little or no help. The white blood cell count is usually normal, though occasionally it may be slightly elevated, to about 12,000. Generally, the differential white blood cell count is not remarkable, but a slight shift of the Schilling count to the left in elevated white counts is seen as expected. The blood sedimentation rate is usually elevated, though as a rule the elevation is not extreme. The Wassermann reaction is negative, as well as the reaction to the tuberculin skin test; these are important in ruling out more serious diseases.

There has been no opportunity to make a pathological study of tissue sections of the synovial membrane, because of the usually rapid subsidence of the symptoms with conservative therapy. I have aspirated these joints on two occasions. The fluid was xanthochromic and seemed to clot readily. No bacteria were present in stains, and the blood chemistry was normal, including sugar values. Chloride and nonprotein nitrogen levels appeared to be within normal limits, that is, about the same as in the blood plasma.

The condition is important, as stated previously, because of the difficulty often encountered in ruling out more serious diseases of the hip. Tuberculosis must be differentiated. This can often be done by a previous history of exposure to the disease, a positive tuberculin skin reaction, and, sooner or later, the inevitable roentgenographic changes in the bone. If doubt exists, aspiration of the joint and testing by guinea pig inoculation may be mandatory.

Osteomyelitis, before bone changes have occurred, may present an obstacle. However, the acute joint swelling, the elevated white blood cell count, and changes in the bone demonstrated by serial roentgenograms later, as well as the more acute general condition of the patient and the persistence of increasingly severe symptoms, all suffice for diagnosis.

Pyogenic arthritis or a septic joint may require aspiration. The presence of purulent material and the demonstration of bacteria by stains are conclusive evidence.

Legg-Perthes' disease is another important condition which must be excluded and which may be misleading in the early stages. As a rule, the more insidious the onset, the longer the duration of symptoms; the tendency for the pain and limp to subside rather than to recur are all important differences between this disease and transient synovitis. X-ray evidence is diagnostic when it occurs.

The acute transient epiphysitis described by Miller may be very similar, but the usually longer duration of the disease, the definite association with diseased tonsils (proved by the fact that Miller reported the patients in his cases recovered promptly when the diseased tonsils were removed), and the demonstration of focal abscesses or abscess tracts in the region of the femoral epiphysis are all differentiating. Butler reports one case of an acute, low-lying retrocecal appendix which caused fixation of the hip joint by psoas muscle spasm and confused the diagnosis.

A series of 13 cases seen at the University of Virginia Hospital from 1943 to 1950 is reported here. There were undoubtedly more cases, but these cases were picked because it was felt that they represented instances of true transient epiphysitis of the hip. No other pathology was demonstrated in the hip joint at any time, and cases in which destructive joint changes were demonstrated later by roentgenograms were discarded.

These patients ranged in age from 4 to 10 years, with an average of 5.4 years. There were seven boys and six girls in the series. Thus these cases are comparable to Finder's as far as age and sex are concerned.

The duration of symptoms ranged from one day to as long as three weeks (one case). As a rule the duration was one to three days. The Wassermann blood reaction was negative in two cases. There was no family history of syphilis in any of the cases. The results of the tuberculin skin test in standard dilutions were negative in nine cases.

Of significance in these cases and leading to the supposition that the condition is due to an allergic hypersensitivity of the synovial membrane to an infection elsewhere in the body rather than to a purely metastatic process is a history of allergy in four cases. There were two cases of asthma, one case of bronchitis, and one case of hay fever. In addition, in five cases there was a history of repeated upper respiratory infections, including frequent colds, sore throat, nasal discharge, and, in one case a history of otitis media, possibly all on an allergic basis. In eight cases hypertrophied and infected tonsils were found. In one case the only demonstrable focus of infection was a partially healed furuncle on the thigh. In one case there was a presumptive diagnosis of typhoid with a positive blood Widal reaction of 1:40 and 1:80. Stool and bile cultures were negative. It was felt, however, that this represented a transient synovitis as a complication of typhoid, because of the prompt response of

the joint symptoms to conservative therapy, the absence of roentgenographic changes, and the fact that the patient has remained well.

The average white blood cell count was 7,000. The blood sedimentation rate (Westergren) was reported in one case as 14 mm. per hour. The average temperature was 99.9 F. The highest temperature was 103 F.

The treatment consisted of simple conservative measures. Eight of the patients were admitted to the hospital and put on complete bed rest with 3 to 5 lb. (1.3 to 2.3 kg.) of straight leg traction on the affected extremity. The patients were given oral sedatives. A few of the patients were given intramuscular injections of penicillin, and several were given sulfonamides orally. Five of the patients were sent home on complete bed rest, as a rule without traction, but warm compresses were applied to the hip. All patients recovered from the symptoms, generally within one week. Symptoms were present in one case for two to three weeks. Two patients with a history of allergy were given an antihistaminic drug, tripelennamine (pyribenzamine®) hydrochloride in 50 mg. doses three times a day. These two patients recovered dramatically in one day and remained well.

REPORT OF CASES

Case 1.—J. J. H., a 9-year-old white boy, had rather sudden onset of pain in the left hip and inside of the thigh the previous day. He stated that he had fallen and bruised his left knee three weeks previously but had been asymptomatic thereafter. He had had a head cold with a slight nasal discharge and headache for one week. The patient was admitted to the hospital, and physical examination revealed hot flushed skin. The temperature was 103 F. The throat and pharynx were infected. Palpation over the head of the left femur and about the hip joint generally was painful. Moderate muscle spasm was present, and all ranges of motion were painful. Internal and external rotation as well as extension were especially painful.

The laboratory findings included a blood hemoglobin value of 12 gm. per 100 cc. The white blood cell count was 13,800, with a moderate shift to the left in the Schilling count. The reactions to the tuberculin and Schick tests were negative. The urine was normal. X-rays of the hip showed no abnormalities.

The treatment consisted of symptomatic measures, bed rest, and 5 lb. (2.3 kg.) of straight leg traction. The patient was also given oral doses of sulfadiazine. The joint symptoms rapidly subsided, and in one week the patient was asymptomatic and was discharged from the hospital. There have been no recurrences.

Case 2.—Mc B., a 4½-year-old white boy, began to have pain in the left hip one day previously. The child became restless and refused to bear weight on the leg. A sore throat had been present for 12 days.

On admission to the hospital, the temperature was 99.2 F. Physical examination revealed enlarged, cryptic tonsils. Marked muscle spasm was present about the left hip, and tenderness was elicited on palpation over the hip anteriorly. Internal rotation, external rotation, and abduction were limited and painful.

The laboratory findings revealed a blood hemoglobin value of 12 gm. per 100 cc. The white blood cell count was 7,200, with a normal differential count. The results of urinalysis were normal. X-rays of the hip revealed no pathological changes.

The treatment consisted of bed rest with 5 lb. (2.3 kg.) of straight leg traction on the affected extremity. He was given 25,000 units of penicillin intramuscularly every three hours for 48 hours. In two days all symptoms had subsided, and the hip joint was freely movable. The patient was discharged on the fourth hospital day and has had no recurrences.

Case 3.—J. S. L., a 4-year-old white boy, had pain in the right hip three days previously. Thereafter he refused to bear weight on the extremity; when he did walk, he limped badly. The patient had had several attacks of tonsillitis, but none during the past several months.

On his admission to the hospital, the temperature was 99.2 F. Physical examination revealed a marked limp with pain in the right leg. Moderate muscle spasm was present about the hip. Internal rotation was limited and painful. The laboratory findings included a blood hemoglobin value of 12 gm. per 100 cc. The white blood cell count was 7,200, with a normal differential count. The urine was normal. Tuberculin skin test gave a negative reaction. Roentgenograms of the hip were negative.

The treatment included bed rest with 5 lb. (2.3 kg.) of straight leg traction on the affected extremity. Symptomatic treatment was given, and the patient was also given oral doses of sulfadiazine. On the third hospital day all joint symptoms had subsided, and a free range of motion was present in the hip. He was discharged on the sixth hospital day and has had no recurrences.

Case 4.—D. D. T., a 5-year-old white girl, was seen in the pediatric outpatient department with a history of having fallen on her right hip five days before. She had no symptoms until one day later, when she complained of pain in the anterior aspect of the right thigh. One day later she refused to use the right leg; she was admitted to the hospital five days after the fall. The temperature was 99 F, and physical examination revealed the right hip was held in flexion and slight internal rotation. Tenderness was elicited on palpation anteriorly over the hip. All ranges of motion were resisted and painful. A "healed furuncle" was present on the lower part of the right thigh.

The laboratory findings revealed a blood hemoglobin value of 12 gm. per 100 cc. The white blood cell count was 5,400, with a normal differential count. The urine was normal. The Wassermann reaction and the reaction to the tuberculin skin test were negative. X-rays of the hip showed no abnormalities. Treatment included palliative measures, bed rest, and 5 lb. (2.3 kg.) of straight leg traction on the extremity. Traction was continued for two weeks, at the end of which the patient was symptom-free, and the hip was freely movable. She was discharged from the hospital and has had no recurrences.

Case 5.—M. F. F., a 5-year-old white boy, had had a limp and pain in the right hip "several weeks" previously. There was no history of trauma. There was some doubt as to the time of onset of the symptoms, but it was presumably about three weeks. He continued to have hip symptoms and was admitted to the hospital. On admission the temperature was 99.8 F. Physical examination revealed large, diseased tonsils. The patient limped rather markedly on the right leg. Abduction and external rotation were limited and painful. The laboratory data included a blood hemoglobin value of 11.5 gm. and a white blood cell count of 6,400, with a normal differential count. The urinalysis disclosed no abnormalities. The result of the tuberculin skin test was negative. Roentgenograms showed a normal hip.

Treatment included bed rest, palliative measures, and 8 lb. (3.6 kg.) straight leg traction on the affected extremity. The joint symptoms subsided, and on the seventh hospital day the patient was symptom-free and was discharged. He has remained well.

Case 6.—P. W., a 5-year-old white girl, complained of pain in the right hip and upper part of the thigh, along with "stiffness" of the hip, for 32 hours. The pain radiated down the inside of the leg to the knee. The child had been in good health and the past history was noncontributory.

On her admission to the hospital, the temperature was 99.3 F. Physical examination revealed moderate muscle spasm about the right hip, which was held in a flexed position and in slight internal rotation. Palpation anteriorly over the hip elicited tenderness. Extension as well as internal and external rotation were limited and painful. The laboratory findings included a blood hemoglobin value of 11.5 gm. per 100 cc. The white blood cell count was 6,600, with a normal differential count. The urine was normal. X-rays of the hip revealed no pathology.

The patient was placed on symptomatic therapy and bed rest and 3 lb. (2.3 kg.) of straight leg traction was applied to the extremity. The symptoms readily subsided, and the patient was discharged on the fourth hospital day. She has had no recurrences.

Case 7.—N. A. P., a 10-year-old white girl, gave a history of a fall five weeks previously. She had no hip symptoms thereafter, but three weeks before admission to the hospital she again fell on the ground; one day later pain and disability developed in

the left hip. She continued to be active but limped rather markedly on the left leg. The past history was noncontributory. The patient was admitted to the hospital with a temperature of 100.8 F. Physical examination revealed limitation of abduction, adduction, and both internal and external rotation of the left hip. No local tenderness was elicited over the hip.

The laboratory data revealed a blood hemoglobin value of 13 gm. per 100 cc. The white blood cell count was 4,600. A slight shift to the right with a relative increase in the lymphocytic count was noted. The urine was normal. The reaction to the tuberculin skin test was negative. X-rays of the hip revealed no pathology.

The treatment included bed rest, symptomatic therapy, and 5 lb. (2.3 kg.) of straight leg traction on the affected extremity. The hip joint symptoms subsided, and on the 15th hospital day she was asymptomatic. The hip joint was freely movable and not painful at this time. Traction was continued, however, and the patient was discharged on the 25th hospital day. She has had no recurrences.

CASE 8.—R. S., a 5-year-old white girl, had pain in the left hip two days previously. The pain radiated down the anterior thigh to the knee. The child began to limp on the left leg. She had a history of bronchitis and frequent colds in the past. There was no history of trauma. Hot compresses had been applied to the hip at home with some benefit. The child was not admitted to the hospital. Physical examination revealed the left hip was held in marked flexion and slight internal rotation. Pronounced muscle spasm was present about the hip. Abduction as well as internal and external rotation were limited and painful. Roentgenograms of the hip showed no abnormalities.

The child was sent home on complete bed rest, and the mother was instructed to continue the hot fomentations to the hip. In addition, the child was given 50 mg. of tripelennamine hydrochloride three times a day for two days because of the previous allergy. The patient showed dramatic improvement and in one day was completely asymptomatic and ambulatory. No further hip joint symptoms have occurred.

CASE 9.—G. H. B., a 5-year-old white boy, began to have pain in the right hip and anterior aspect of the thigh two days previously. The patient also limped noticeably on the right leg. The child had a history of allergy, including hay fever, "sinus trouble," and frequent colds. At this time he had had a cold for one week. The patient was not admitted to the hospital. Physical examination revealed tenderness on palpation anteriorly over the right hip. There was marked limitation of internal and external rotation of the hip, and these movements produced pain. X-rays of the hip revealed no pathological changes. The patient was sent home on complete bed rest, and hot fomentations were applied to the hip. The child was also given oral doses of sulfonamides. All of the hip joint symptoms subsided in two or three days, and the patient became ambulatory. The patient has remained symptom-free.

CASE 10.—L. H., a 5-year-old white girl, was seen in the pediatric outpatient department complaining of a limp and pain in the right hip of several days' duration. There was a history of asthma, and she had had repeated upper respiratory infections and sore throat in the past. The patient was not admitted to the hospital. Physical examination revealed moderate muscle spasm generally about the right hip. Internal and external rotation were limited and painful. X-rays of the hip revealed no pathology. The patient was sent home on constant bed rest and was instructed to apply hot fomentations to the hip. These measures were carried out, and in five days the joint was asymptomatic and the child ambulatory.

Two years later this child had a similar history and condition in the left hip. X-rays of both hips again revealed no pathological changes. She was sent home and given the same treatment as she had received for the right hip; again her symptoms subsided within a few days. She has had no further recurrences.

CASE 11.—T. F., a 5-year-old white boy, had fallen on his buttocks five days previously. The child was asymptomatic until four days later, when he began to have a limp and pain in the right hip. The symptoms did not appear to be acute. One day after the onset of the symptoms the patient was seen but not admitted to the hospital. Physical examination revealed enlarged, chronically infected tonsils. There was limitation of external rotation, which was painful, in the right hip. X-rays of the hip did not reveal any abnormalities.

This patient was sent home on strict bed rest, and hot fomentations were applied to the hip. All symptoms were absent in two days, and the child became ambulatory. There have been no recurrences.

CASE 12.—E. M. T., a 5-year-old white girl, complained of pain in the right hip of one day's duration. According to the mother, the child awoke in the morning complaining of the painful hip. The pain radiated down the anterior aspect of the thigh to the knee. The child had a pronounced limp on the right leg and weight-bearing was painful. There was no history of allergy or other infectious foci. The patient was not admitted to the hospital.

Physical examination revealed moderate muscle spasm about the right hip, which was held in a position of flexion and slight internal rotation. Tenderness was present anteriorly over the hip joint on palpation. Abduction and internal and external rotation were limited and painful. The hip appeared to be normal on x-ray examination.

The patient was sent home on continuous bed rest, and warm compresses were applied to the hip. Also, on the theory that there was a hypersensitivity reaction in the hip joint, even though no positive history of allergy was obtained, the child was given 50 mg. of tripelennamine hydrochloride twice a day. She showed dramatic response to the treatment and was completely asymptomatic and ambulatory in one day. She has had no recurrences.

CASE 13.—W. G. S., a 6-year-old white boy, complained of pain in the right hip for five days. He also had a marked limp on the right leg, and the pain was aggravated by weight-bearing. There was no history of trauma. The symptoms steadily increased in severity.

The patient was admitted to the hospital. The temperature was 99.8 F; physical examination disclosed that the tonsils were hypertrophied and inflamed. There was tenderness to palpation both anteriorly and posteriorly about the right hip. Abduction, flexion, and external rotation of the hip were limited and painful. The blood hemoglobin value was 90% (Sahli-Hellige). The white blood cell count was 14,000. The differential white blood count showed a moderate shift to the left, with an increase in the "stab" forms. The results of urinalysis were normal. Reaction to the tuberculin skin test was negative. X-rays of the hip joint showed no abnormalities.

Treatment consisted of continuous bed rest and 5 lb. (2.3 kg.) of straight leg traction applied to the affected extremity. A tonsillectomy was done after the first week, after which the daily temperature readings reached as high as 103 F. Typhoid was suspected. Stool cultures as well as bile cultures were negative for typhoid bacilli. Blood cultures were negative. Positive reactions to the Widal test for typhoid in dilutions of 1:40 and 1:80 were obtained, and a presumptive diagnosis of typhoid was made. Thereafter the patient recovered rapidly, and the temperature was normal in two weeks. The joint symptoms were absent after two weeks in the hospital. Repeated roentgenograms of the hip disclosed no pathological changes. The child was discharged from the hospital in three weeks with a spica bandage on the hip as a precautionary measure. Follow-up x-ray examinations revealed no hip joint changes, and the patient had no recurrences. In spite of a positive blood Widal reaction, it was felt that this was an instance of true transient synovitis of the hip joint which was possibly a complication of typhoid.

SUMMARY AND CONCLUSIONS

Transient synovitis of the hip joint is a common condition in children under 10 years of age. The literature pertaining to the subject is reviewed. The etiology of the condition is discussed, and it is felt most likely that it represents an allergic hypersensitivity or toxic reaction to some other focus of infection in the body. It could possibly be caused by a blood-borne infection lodging in the synovium or a metastatic spread from another focus of infection in the body. The average age of the patients is 5.4 years. Boys and girls appear to be affected in about

equal number. The main symptoms are pain and limp. Muscle spasm and limitation of motion, particularly internal and external rotation, as well as abduction, are the cardinal clinical signs. The temperature is slightly elevated. Positive laboratory findings include a slightly elevated white blood cell count, which may, however, be normal. The blood sedimentation rate is as a rule moderately elevated. Negative Wassermann and tuberculin skin reactions are important. Roentgenograms of the hip show no abnormalities. The absence of bacteria in the synovial fluid is important. The differential diagnosis excluding especially such conditions as tuberculosis, osteomyelitis, septic arthritis, and Legg-Perthes' disease, as well as the condition described by Miller as acute transient epiphysitis, is discussed. In eight of the cases presented, the patients had enlarged, infected tonsils. Four of them had a history of allergy, including asthma, hay fever, sinusitis, and bronchitis. In addition, five had histories of repeated upper respiratory tract infections. In one case there was a positive blood reaction to the Widal test for typhoid in dilutions of 1:40 and 1:80. The treatment, consisting of bed rest, symptomatic measures for relief, and traction on the affected extremity, is outlined. Also, two cases are reported in which an antihistamine drug, tripelennamine hydrochloride, was tried with dramatic results. It is felt that this lends support to the theory that the condition has an allergic or hypersensitivity basis.

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PHYSICAL EXAMINATION OF THE CEREBRAL PALSIED CHILD

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Within recent years certain medical and lay groups have shown an active increase of interest in the varied problems of children with cerebral palsy. The factors underlying this renewed attention have been outlined elsewhere.[1] According to the Medical News columns of THE JOURNAL at least 16 new cerebral palsy centers of permanent character have been established in this country during the past four years. For the most part these facilities are designed for case-finding, diagnosis, and treatment; a few of them have been set up to meet the unusual educational needs of cerebral palsied children. Some states have appropriated special funds to deal with cerebral palsy, and require physicians to report cases to the state health department. A national parents' society,[2] with objectives in cerebral palsy comparable to those of the National Foundation in the field of infantile paralysis, was founded in 1949. All of this renewed stress on a positive approach to cerebral palsy has highlighted the desirability of early diagnosis and prompt and adequate treatment. According to Temple Fay,[3]

> Accurate medical screening with diagnostic classification as well as planning and prognosis are first essentials in any long-range educational or training effort (for cerebral palsy). . . . One of the first objectives that the medical profession has to face is the problem of diagnostic screening.

In dealing with cerebral palsied children one must constantly reckon with the emotional involvement of parents; the dynamic character of parental organizations is a reflection of a consuming interest in the welfare of these children. The members of such organizations usually possess a considerable fund of information about cerebral palsy in general. Unjustly or not, parents sometimes consider medical practitioners insufficiently informed about the condition and are especially disturbed by delays in diagnosis. Although even the most experienced examiner may occasionally err in the diagnostic evaluation of the cerebral palsied child, at least a presumptive identification of the condition can be made by any interested practitioner within the first six months of life—certainly by the end of the first year. Ordinarily the physician in general practice, because of his early contact with these infants, will first be in position to suspect the diagnosis. The general practitioner should assume a leading role in diagnosing cerebral palsy and in the all-important job of parent counseling.

OBJECTIVES OF EXAMINATION

It is the purpose of this article to outline methods, none of them essentially original, which have been found helpful in evaluating cerebral palsy in infants and children. No reference will be made to accessory instrumental technics, such as pneumo- and electro-encephalography, which may occasionally be utilized in diagnosis, or to the value of graphic records, such as moving pictures. Stress has been laid on reducing the multitude of possible clinical tests to a concise form. The initial examination of a cerebral palsied child is usually but one of a series and often a point of departure for special evaluations in categories such as sight, hearing, and cortical functions. In many cases the examining physician will need help from one or more of his colleagues in the specialties or from those specially versed in speech, perceptual, and behavior disorders.[4] While the importance of consultations can scarcely be overstressed, it is essential that at least one member of the team assume responsibility for correlating this data with the broad evaluation outlined in the following paragraphs. The aim is to achieve a working diagnostic and prognostic concept which takes into account the child as a whole, both as a patient and as a burgeoning personality.

CASE MATERIAL

A total of 406 children, referred with a presumptive diagnosis of cerebral palsy [5] and ranging in age from 4 months to 21 years, have been personally examined by

1. Fuldner, R. V., and Spekter, L.: Cerebral Palsy in Connecticut Today, Connecticut S. M. J. **13**: 12 (Jan.) 1949.
2. The United Cerebral Palsy Associations. The National Society for Crippled Children and Adults also devotes much of its work to the field of cerebral palsy.
3. Fay, T.: Cerebral Palsy: Medical Considerations and Classification, Am. J. Psychiat. **107**: 180 (Sept.) 1950.
4. Strauss, A. A., and Lehtinen, L. E.: Psychopathology and Education of the Brain-Injured Child, New York, Grune & Stratton, 1947.
5. The case material has been drawn principally from the Cerebral Palsy Clinic of the Newington Home and Hospital for Crippled Children, Newington, Conn., and from a state-wide survey of cerebral palsy conducted by the Connecticut State Department of Health in 1950.

me in the course of the last four years. The purpose of the examinations was essentially pragmatic—to assess and record the child's motor and other pertinent disabilities as accurately as possible, having in mind rehabilitation requirements, the prospects of the patient's response to treatment, and the eventual prognosis in terms of social as well as physical adaptations. Of the total 406 children, 291 were diagnosed as having cerebral palsy, with or without convulsions and/or mental defect; 83 as mental or behavior problems, without evidence of cerebral palsy and 27 as falling in categories other than these two—e. g., epilepsy, hearing or speech defect, progressive muscular dystrophy. Among the remaining five children a satisfactory diagnosis could not be established.

DEFINITION AND CLASSIFICATION

While definitions of cerebral palsy vary, most agree in describing the condition as essentially a motor disturbance arising from injury or disease of the brain. The symptoms of cerebral palsy, in the usual connotation of the term, become evident in infancy or childhood. By common consent, if not logically, the acute phase of infections is excluded, as are also progressive disorders, epilepsy, and behavior disturbances. It is apparent that such a definition possesses arbitrary limits. A child with arrested hydrocephalus may be included, one with progressive hydrocephalus not, the inclusion or exclusion of a borderline case resting on the examiner's decision. Occasionally this assumes importance in relation to a child's eligibility for treatment or other services. Many patients present varying combinations of cerebral palsy and mental defect, or cerebral palsy and convulsive symptoms; here the horns of the diagnostic dilemma may be escaped by listing two or more diagnoses. In lay circles there is a tendency to use cerebral palsy as an euphemism for mental defect, and the examiner may at times be pressed to render a diagnosis of cerebral palsy in a defective child with motor immaturities or stereotypies (see Case 3). The categories of cerebral palsy are defined and described in the writings of Phelps [6] and Perlstein.[7]

HISTORY TAKING

The conduct of the examination will be described only briefly, since the accompanying diagnostic tables (Tables 2 and 4) are meant to be self-explaining.[8] As a preliminary to the physical examination, it is advisable to become thoroughly acquainted with the patient's history. In addition to the usual pediatric history, a detailed record should be obtained of the patient's birth (Table 1). These data are of especial importance in conditions such as erythroblastosis, anomalies of the central nervous system, and birth traumas. Similarly, the patient's postnatal or developmental history should be compared with the normal chronology of maturation (Table 2); if desired, an outline form similar to Table 1 can be made up for this purpose from the data supplied in Table 2. While prepared forms conserve time and make convenient records, in their use one must guard against adopting an unthinking routine. It need scarcely be said that departures from the norms in birth and development may point to a variety of disturbances other than cerebral palsy. Special studies are available [9] which help to explain the relationship of cerebral palsy to factors brought to light by the history.

CONDUCT OF EXAMINATION

The eliciting and interpretation of physical signs in these children is often of such interest and complexity that the examiner may lose sight of the wood for the trees. Initially at least, a conspectus of the patient's abilities and disabilities is of more practical importance than an attempt to establish the localization of the lesion. This concept forms the basis of the examination technic.

Since the physical examination is based so largely on motor performance, it is essential that the patient "perform" to the best of his ability and with minimal constraint. Usually it is not difficult to enlist the child's cooperation, provided that he is not defective mentally and a personality disturbance is not present. With older children the examination may conveniently start in the waiting room, the patient being observed as he arises from the sitting position, walks to the examining room, and undresses. In addition to performance, the examination of the extremities should emphasize the testing of muscle

TABLE 1.—*Form for Recording Details of Birth History, Including Pregnancy and Neonatal Period*

Name.....Age.....Date.....

Family	Neonatal Status
Father's age.....Rh type.....	Birth weight.....Rh type.....
Mother's age.....Rh type.....	Birth weight reestablished.....
Miscarriages.....	Cry, resuscitation.....
	Head bruises.....
Siblings (age, status)	Respiration.....
1.....	Pallor, cyanosis.....
2.....	Apathy, stupor.....
3.....	Fever.....
4.....	Restlessness, twitching.....
5.....	Convulsions, rigidity.....
6.....	Head carriage.....
Twinning.....	Strabismus, nystagmus.....
Familial disorders.....	Sucking, feeding.....
	Vomiting.....
Pregnancy	
Duration.....	Jaundice.....
Illnesses, accidents.....	Incubator, oxygen.....
Labor	
Duration.....	Transfusions.....
Presentation.....	Spinal tap.....
Surgery, instruments.....	Left hospital at age.....
Analgesics, anesthetics.....	Physicians statement in hospital.....
Maternal status postpartum.....	Additional.....
Complications.....	

Summary

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6. Phelps, W. M.: Description and Differentiation of Types of Cerebral Palsy, Nerv. Child **8**: 107 (April) 1949.

7. Perlstein, M. A., and McPeak, W.: The Problem of Cerebral Palsy Today, Chicago, The National Society for Crippled Children, 1947.

8. (*a*) Gesell, A., and Amatruda, C. S.: Developmental Diagnosis, Normal and Abnormal Child Development, Clinical Methods and Pediatric Applications, ed. 2, New York, Paul B. Hoeber, Inc., 1947. (*b*) Dunham, E. C.: Appraisal of the Newborn Infant, Bureau Publication 242, United States Department of Labor, Children's Bureau, 1938. (*c*) Knop, C.: Dynamics of Newly Born Babies, J. Pediat. **29**: 721 (Dec.) 1946. (*d*) Ford, F. R.: Diseases of the Nervous System in Infancy, Childhood and Adolescence, ed. 2, Springfield, Ill., Charles C Thomas, Publisher, 1945. (*e*) Sachs, B., and Hausman, L.: Nervous and Mental Disorders from Birth Through Adolescence, New York, Paul B. Hoeber, Inc., 1926. (*f*) Pohl, J. F.: Cerebral Palsy, St. Paul, The Bruce Publishing Company, 1950. (*g*) Aldrich, C. A., and Norval, M. A.: Developmental Graph for First Year of Life, J. Pediat. **29**: 304 (Sept.) 1946.

9. Evans, P. R.: Antecedents of Infantile Cerebral Palsy, Arch. Dis. Childhood **23**: 213 (Dec.) 1948. Yannet, H.: Etiology of Congenital Cerebral Palsy: Statistical and Clinical Study, J. Pediat. **24**: 38 (Jan.) 1944.

tone, weaknesses, contractures, and abnormal movements. With young children this phase of the examination may start while the patient is at ease in his mother's arms; later he can be transferred to the examiner's lap and finally to the table.

With infants any bright, dangling object may be used to test such functions as eyesight, reach, and grasp, while incidental observations are made of adaptive responses. A toy on a string (Figure) will bait a small child into ambulating so that his forward and backward gaits may be observed, as well as balance and synergy. With older children a rubber ball tossed with the examiner offers a convenient means of testing all the capacities just enumerated, together with the degree of motor integration in such skilled performances as pivoting and running. Conditions such as borderline spasticity and slight incoordi-

TABLE 2.—*Norms and Deviations of Motor Development of the Infant**†

Months	Head, Eyes	Mouth	Upper Extremities	Lower Extremities	Hearing, Vocalization	Psychomotor	Miscellaneous
Newborn	Head in lateral position (supine) Tonic neck reflex	Sucking imperfect	Fisted hand Grasp reflex	Grasp reflex (foot) Rossolimo reflex	Lusty cry Moro reflex (Dunham [8b])	.....	Knop test (Knop [8c])
2	Beginning eye fixation Lifts chin in prone position **Nystagmus** **Persistent head tilting, rolling**	.....	.....	**Spontaneous Babinski reflex**	Vowel sounds	Brief regard of moving objects Smiles, frowns *Lack of expression*	**Stiffening** **Opisthotonos**
3	Beginning head carriage in upright position *Strabismus*	.....	Props on flexed arms in prone position	Beginning extension of one leg in supported upright position	Responsive vocalization	Regards own hands Tears	.....
4	Improved eye fixation Head in midposition (supine) Lifts head in prone position Neck and otolith righting reflexes (Ford [8d])	Sucking coordinated	Beginning reaching Whole hand grasp Arm postures, activities symmetrical; hands brought together in front *Persistent fisting*	.....	Increased vocalization Laughter	Attention more sustained	.....
5	*Head lag when pulled to sitting position*	.....	Props on extended arms in prone position *Grasp reflex*	.....	*Moro reflex*	.....	.....
6	Head fully erect in upright position *Tonic neck reflex*	.....	Reaching coordinated Rolls over to prone position **Random, automatic movements** **Persistent postures**	Kicks high in supine position **Random, automatic movements** **Persistent postures**	Vocalizes to playthings Turns toward sounds	Attention confined to one object at a time Discriminates strangers	Abdominal reflexes *Creeping reflex*
7	Reacts to image in mirror (Sachs and Hausman [8e])	Mouthing of objects Ingests strained foods	Objects scratched at, seized, transferred from hand to hand	Temporary extension of legs in supported upright position	.....	.....	Beginning unsupported sitting Falling reactions (Ford [8d]) **Adduction of legs in sitting; difficult diapering** (Pohl [8f])
8	.....	Chews toys Bites, munches	Grasp well developed Beginning pinch	Stands briefly with support *Legs dragged in crawl*	.....	.....	Crawls (Aldrich [8g]) *Trunk slump*
9	.....	Feeds self cracker	Apposition of thumb and first two fingers Holds bottle	Stands, holding on *Leg withdrawal, adduction in supported standing*	Mono- and disyllables Imitates sounds Responds to name, "no," "come"	.....	Beginning creep
10	.....	.....	Beginning release of grasp Joins objects in hands	.....	.....	Waves bye	Sits well Hitches in sitting position *Progression by rolling, hitching in supine position*
12	.....	Mouth kept closed *Drooling* *Sucking reflex*	Improved release of grasp Improved pinch	Beginning walking **Lurching, scissoring**	.....	Proffers toys on request Cooperates in dressing	Pivots on buttocks Landau reflex
18	.....	Chews well *Indiscriminate mouthing* (Sachs and Hausman [8e])	Hurls ball in upright position Piles blocks, pulls toys *Difficulty in release of grasp* *Hyperextension of fingers in release* *Persistent throwing, banging* *Stereotypy* (Sachs and Hausman [8e])	Seats self *Steppage gait* *Unsteadiness*	.....	Looks at picture book Helps in feeding Partial toilet training	.....
21	.....	.....	Handles cup well	Kicks (standing) *Wide base*	Beginning sentences Echoing	Asks for food, drink, toilet, (word or gesture)	.....
24	.....	.....	.....	Runs, climbs stairs *Babinski reflex*	.....	Identifies pictures Partial dressing More or less complete toilet training	*Landau reflex*

* Roman type: normal at indicated age. Italics: abnormal beyond indicated age. Heavy type: abnormal at any time.

† The data has been drawn from a number of sources, as indicated, but especially from the wealth of clinical material available in Gesell and Amatruda's "Developmental Diagnosis." [8a] To emphasize the latitude which should be allowed in comparing the patient's status with norms, a chronology of months instead of weeks has been used.

nations, easily missed in the neurological examination, are magnified and readily observed in acts of catching, running, and jumping. During this part of the examination a cursory impression is gained of the patient's level of intelligence, hearing ability, and speech, to be supplemented later with the use of test objects, such as picture books, a crayon, whistle, and tuning fork (Figure). In his clinics M. A. Perlstein demonstrates the utility of lollipops for testing adaptation, hand usage and dominance, and lip and tongue movements; the "sucker" also enlists cooperation from balky subjects.

The general coverage of the physical examination is indicated by the listings on the work sheet (Table 3), arranged as on standard mimeograph paper. The form is convenient for recording the patient's status in abbreviated terms and, with subsequent visits, for checking progress in motor skills, such as balance, ambulation, and use of the dominant extremity. So far as the examiner is concerned, however, the form will have attained its chief value when the procedure has become so familiar that the form can be dispensed with. The steps of the examination are not necessarily completed in the order

Diagnostic kit for examination of cerebral palsied children.

listed nor in their entirety for every patient. Suggestions for use of the work sheet are set forth in the key (Table 4). (Descriptions of the reflexes mentioned may be found in the standard neurological texts, such as Ford,[8d] and Grinker and Bucy [10]; the Knop test [8e] is an observation of the degree of muscle tonus exhibited in lifting the supine infant to a sitting position by means of his arms.) In some instances it may be desirable to supplement the examination of the extremities by sensory testing or by standard muscle examinations. So far as the latter are concerned, results should be received with caution. On occasion I have been chagrined to discover that a muscle which I had graded zero later displayed appreciable function when the spasticity of its antagonist had been improved by treatment.

SPECIAL EXAMINATIONS

In assessing the special senses, as with other features of the examination, consultation with medical specialists and other qualified workers is often required. These capacities must be evaluated in a preliminary way, however, along the lines suggested in the key (Table 4), since, of course, the results of the physical examination may lose much of their significance when gross defects of sight, hearing, or cortical perception are present. Similar comment may be offered so far as evaluating intelligence is concerned. While the examiner must ultimately rely on those specially qualified in this field, with accumulation of experience he will probably come to have increasing confidence in his own impression, as well as increasing skepticism of ready judgments. Not infre-

TABLE 3.—*Work Sheet for Examination of Cerebral Palsied Children (Diagnosis Based on History as Well as Physical Findings)*

Name.....Age.....Date.....

Appearance	**Special Functions**	
Head	Sight	
Facies	Hearing	
Eyes	Vocalization	
Attention	Tongue, swallowing	
Responses	Sphincters	
Behavior	Memory	
Intelligence	Cortical sensory	
Neck and Trunk	**Progression**	**Reflexes (Infantile)**
Breathing	Kicking	Tonic neck
	Crawling	Inversion
Involuntary movements	Creeping	Moro
	Gait (held, free)	Sucking
Neck carriage		Righting
		Otolith
Sitting (held, free)		Creeping
		Landau
Kneeling (held, free)		Knop
		Reflexes (Trunk)
Standing (held, free)	Running	Costal
		Abdominal
Supports	Ataxia	Cremasteric
Upper Extremities	**Lower Extremities**	
Carriage	Carriage	
Involuntary movements	Involuntary movements	
Strength	Strength	
Tone	Tone	
Contractures	Contractures	
Reaching	**Reflexes**	
Grasp	Adductor stretch	
Pinch	Quadriceps	
Dominance	Quadriceps stretch	
Reflexes		
Biceps	Hamstring stretch	
Biceps stretch	Tendo achillis	
Triceps	Tendo achillis stretch	
Triceps stretch	Tendo achillis clonus	
Radial	Plantar	
Grasp	Crossed extension	
Rebound	Rebound	
Others	Others	

Additional Findings.....

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Summary of Physical Examination.....

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Provisional Diagnosis.....

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10. Grinker, R. R., and Bucy, P. C.: Neurology, ed. 4, Springfield, Ill., Charles C Thomas, Publisher, 1949.

TABLE 4.—*Key for Use of Worksheet (Table 3)*

Name.....Age.....Date.....

Appearance

- **Head**
  Position, carriage, size, shape; involuntary movements; fontanels
- **Facies**
  Expression, grimacing, overflow; palsy
- **Eyes**
  Pupillary reflexes, fixation, extraocular movements, strabismus, nystagmus, searching; fundi
- **Attention**
  Degree and duration of interest in surroundings, playthings, pictures
- **Responses**
  As compared with norms for age (see Table 2)
- **Behavior**
  Adaptation to surroundings; friendliness, listlessness, tantrums, restlessness, stereotyped actions
- **Intelligence**
  Curiosity, interest, awareness, responsiveness

Special Functions

- **Sight**
  Blink reflex; response to light; following, reaching
- **Hearing**
  Voice, noise, whistle, tuning forks
- **Vocalization**
  Phonation, enunciation, verbalization
- **Tongue; swallowing**
  Voluntary and involuntary movements; salivation, chewing
- **Sphincters**
  Control of bladder, rectum; diapers
- **Memory**
  Siblings' names; details of trip to clinic; home activities; radio and TV programs
- **Cortical sensory**
  Stereognosis; agnosia, aphasia, apraxia

Neck and Trunk

- **Breathing**
  Chest-abdomen coordination
- **Involuntary movements**
  Tic, dystonia, athetosis, tremor, ataxia
- **Neck carriage**
  Droop, balance, torticollis; neck-limb automatism
- **Sitting (held; free)**
  Balance
- **Kneeling (held; free)**
  Balance
- **Standing (held; free)**
  Balance, width of base
- **Supports**
  Braces, crutches, canes

Progression

- **Kicking**
  Leg alternation; flexor-extensor coordination
- **Crawling and Creeping**
  Leg-arm alternation; strength; head carriage
- **Gait (held; free)**
  Sense of progression and leg alternation; strength, balance, sway; trunk carriage; associated arm movements; rotation, scissoring; steppage; hip and knee position; ankle-foot carriage; involuntary movements
- **Running**
  Leg-arm coordination; carriage of legs and arms
- **Ataxia**
  Romberg; unsteadiness in gait

Reflexes (Infantile)

Tonic neck
Inversion
Moro
Sucking
Righting
Otolith
Creeping
Landau
Knop
(See text for comments on reflexes)

Reflexes (Trunk)

Costal
Abdominal
Cremasteric

Upper Extremities

- **Carriage**
  Position of shoulder, wrist, elbow, fingers, thumb
- **Involuntary movements**
  Overflow, athetosis, tremor, ballismus, ataxia, stereotypy
- **Strength**
  Voluntary power in chief joint actions; muscle atrophy
- **Tone**
  Biceps, triceps; flexors, extensors, rotators of wrist; flexors, extensors of fingers (normal, spastic, hypotonic, flaccid, rigid)
- **Contractures**
  Shoulder, elbow, forearm, wrist, fingers, thumb
- **Reaching**
  Speed, accuracy, involuntary movements
- **Grasp and pinch**
  Strength, control, effectiveness; position of wrist, thumb; overgrasp; release
- **Dominance**
  Right or left hand

Reflexes

Biceps
Biceps stretch
Triceps
Triceps stretch
Radial
Grasp
Rebound
Others
Hoffmann, Leri, Mayer

Lower Extremities

- **Carriage**
  Position of hip, knee, ankle, foot
- **Involuntary movements**
  Overflow, athetosis, tremor, ataxia
- **Strength**
  Voluntary power in chief joint actions; muscle atrophy
- **Tone**
  Gluteals; flexors, adductors of hip; flexors, extensors of knee, ankle (normal, spastic, hypotonic, flaccid, rigid)
- **Contractures**
  Hip, knee, ankle, foot

Reflexes

Adductor stretch
Quadriceps
Quadriceps stretch
Hamstring stretch
Tendo achillis
Tendo achillis stretch
Tendo achillis clonus
Plantar
Crossed extension
Rebound
Others
Gonda, Rossolimo, Oppenheim, Marie-Foix

Additional Findings

Including results of previous surgery; fit and effectiveness of braces; synkinetic movements

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Summary of Physical Examination

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Provisional Diagnosis

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quently even the well-trained psychologist expresses doubt as to the validity of his findings in children with sensory or motor handicaps.[11] For the purpose of this initial examination a child's intelligence may be gauged in terms of his curiosity, interest, awareness, responsiveness, and memory. If these qualities are present, some inkling of them breaks through even the most devastating handicap,[12] and a cursory appreciation can scarcely be avoided in the course of the examination. Later the patient's response to treatment and his progress between examinations will provide additional information. With these children it is safest to hold any opinion of intelligence only tentatively, and, except in the most flagrant instances of mental defect, a child is never denied treatment on the basis of a single intelligence evaluation from any source.

REPORT OF CASES

The following case abstracts represent common diagnostic problems and errors. The history and physical examination have been reduced to the briefest possible terms and normal findings usually omitted. Fewer diagnostic errors and delays would have occurred if the procedure outlined previously had always been followed in detail.

CASE 1.—R. H., a boy, 2 years, did not sit up. His birth weight was 7¼ lb. (3,290 gm.). No neonatal abnormalities or seizures were recalled. The mother became concerned when the child was 9 months and failed to sit. A diagnostic work-up, including a pneumoencephalogram, was performed when the child was 1 year. A large porencephalic cyst was disclosed in the left temporal region, and the mother was advised to place the child in an institution for retarded children. At examination the child lay supine on the table, made no overt responses, and failed to reach. He apparently saw and heard. He could not sit or hold up his head. There was no vocalization and little spontaneous movement of the arms or legs. No motor defect was discovered in the extremities except spasticity of the right arm. The impression was—"There is little doubt that significant mental handicap is present. The patient is to be placed on a list for a state institution for the feeble-minded."

At four years the patient sat up with support; his head drooped. He manipulated playthings and tried to use his left hand for feeding. He understood very well and said a few words. He was fairly well toilet-trained. At the examination the patient could sit up when strongly supported, but with a marked tendency for the head and trunk to slump. He smiled to appropriate stimuli and correctly indicated objects in the room and pictures in the book. He tried to follow simple commands. His speech was very labored, but he answered questions correctly by giving his own name and that of his sister. The muscle tone and reflexes were not increased. Athetosis was evident with the attempted use of the hands and also in the lower extremities when the patient was placed on his feet. His balance was poor. Results from the psychometric examination (revised Stanford-Binet Form L) were that "although the patient would have to be classified numerically as falling in the high-moron category, it was quite evident that this was in a large degree due to his physical handicaps and that the child was probably of normal intelligence." The impression was—"There is diffuse athetosis, but the child appears to fall within normal mental limits.

CASE 2.—J. DeL., a boy, 2 years, did not hold his head up. The history revealed normal gestation, prolonged instrumental delivery, and a birth weight of 7 lb. (3,180 gm.). The infant was cyanotic and "cold" and in the incubator 30 days. His first year was not remarkable except for a failure to "relax" and to sit unsupported. He never crawled but lay on his back and pushed along. He began assisted walking at 1 year but could not walk alone. The patient understood simple commands like "stop," did not talk but seemed to try. He did not help with his feeding or dressing but played with blocks and tried to turn pages of books. He had no toilet training. Examination revealed a well-nourished child apparently with good eyesight and hearing. The patient preferred to lie supine with his arms flexed on the table alongside his head. He made no involuntary motions in this position. He was weak in holding his head and sitting up. There was no increase in muscle tone and no reflex abnormalities. The patient took a few steps supported and "seemed to display an infantile weakness of gait rather than a definite motor abnormality." He was slow in picking a block from the box and did not play with it. He did not reach for keys, but showed some interest in a picture book; he did not turn the pages. The impression was—"The patient appears to have developmental retardation, probably on the basis of mental defect rather than significant motor involvement; he will require more study, however."

At 2½ years the mother had been following the prescribed exercises daily and thought the child showed improvement. He held his head up in the prone position, used his legs in crawling, but did not seem to get proper motions from his arms. He could roll from the prone to supine position and back again. Glossolalia was constant, but the patient said a few understandable monosyllables. He could point to his eyes and ears on request and wave bye. At examination the child was responsive, smiling, and inquisitive. He was constantly thrashing his legs (not arms) in the supine position. There was no definite increase in muscle tone. He sat with fair balance and tended to let his head droop. In reaching he kept his fingers and thumb in extension; there was no opposition. He walked as before. The impression was—"The patient has considerably better intelligence than previously implied and perhaps proximal athetosis of the extremities."

At 3 years the patient liked the standing table and used it for an hour at a time. He was interested in playthings and spoke a few words. He sat on the floor alone. There had been no progress in self-feeding or toilet training. At examination the patient sat steadily, but with the head slumped, and clambered to a supported kneeling position with effort. He held his head up well in the prone position and could make a few crawling movements. His arms wavered in reaching and his fingers showed hyperextension in attempted grasp. The patient walked with support on a wide base, unsteadily. Bilateral Babinski reflex was present. The child was well-oriented and pointed out pictures correctly in the book. The impression was—"It is now obvious that the patient is an athetoid; his intelligence is probably good."

CASE 3.—D. L., a boy, 9 years, was referred with a parental diagnosis of cerebral palsy. The complaint was that he was slow in learning. The birth history was not remarkable. A cyanotic attack had developed in the early neonatal period, requiring artificial respiration. The patient took feedings poorly—had to be spoon-fed. The chronologies of motor development were normal except that spoken words and toilet training were delayed until the fourth year. He had had no seizures. He was never accepted for schooling. At examination the patient seemed attentive and obeyed commands readily. He answered simple questions monosyllabically but correctly, identified parts of the body, and counted up to three. His upper extremities showed frequent purposeless repetitive movements which were well coordinated and under voluntary control; these movements disappeared when the child was undressing himself or using a pencil. When the patient walked, his gait was slightly shuffling, with mild flexion of the knees. Tone and reflexes were normal; there were no contractures. Psychometric examination revealed an intelligence quotient rating of 46. The impression was—mental deficiency, with no organic motor defect of significant degree.

CASE 4.—P. B. was a boy, 14 months. His mother was a registered nurse; her sister had bilateral hip disease of some kind. The patient did not sit up alone, and his muscles appeared

11. Strather, C. R.: Evaluating Intelligence of Children Handicapped by Cerebral Palsy, Crippled Child **23**: 82 (Oct.) 1945. Burgemeister, B. B., and Blum, L. H.: Intellectual Evaluation of a Group of Cerebral Palsied Children, Nerv. Child. **8**: 177 (April) 1949. Bice, H. V.: Psychological Services for the Cerebral Palsied, Nerv. Child **8**: 183 (April) 1949.

12. Hoopes, G. G.: Out of the Running, Springfield, Ill., Charles C Thomas, Publisher, 1939. Gesell, A., and Zimmerman, H. M.: Correlations of Behavior and Neuropathology in a Case of Cerebral Palsy from Birth Injury, Am. J. Psychiat. **94**: 505 (Nov.) 1937.

very tight. An "emergency cesarian" had been performed because of a prolonged first stage with weakening of the fetal heartbeat. The birth weight was 6 lb. 8 oz. (2,960 gm.). The baby was cyanotic and required resuscitation; he was in an oxygen tent 12 hours. Thereafter no abnormality was noted except general tightness of the muscles. There were no convulsions. The patient held his head up at 6 months, but with an inclination to the right. He never crawled and could not sit by himself. He began to stand, walk and talk at 12 months. He was toilet-trained at 10 months. At examination the patient was well developed, alert, and interested. He used his hands and arms well but slumped in sitting. There was a "distinct tightness of the leg adductors bilaterally, so that abduction beyond 15 degrees appeared painful; the frog position could not be approached." An infantile type (supported) gait was present; there was no equinus or cross legging. Reflexes were modal. There was no palpable defect of the lumbar spine; the second and third toes were webbed bilaterally. X-rays showed no abnormality of the hips; there was spina bifida of the fourth lumbar vertebra. The impression was—"adductor spasm, presumably on the basis of spina bifida occulta."

At 20 months the mother had been following the prescribed exercises, and the patient had recently begun active crawling. He still slumped in sitting and tended to move his whole body whenever he moved an extremity. He did not walk except when supported. He talked well and fed himself entirely. At examination the patient was responsive and actively interested in playthings. In his use of the hands there was overextension of the fingers and accompanying truncal movements. His grasp was well coordinated, and there was excellent coordination of the extremities when he crawled. The tightness of the leg adductors was less marked than before, but there was now demonstrable tightness of the heel cords. When he walked with support, the chief characteristic seemed to be weakness of the lower extremities, with considerable pronation; there was no equinus or cross legging. The knee jerks were hyperactive and the ankle jerks normal. The impression was—"There is little doubt that the patient has cerebral palsy of a mixed spastic-flaccid paraplegic type, with some involvement of the upper extremities and trunk."

Case 5.—A. P., a boy 3½ years, did not walk. He was the seventh child—three others are alive and well, the remaining were stillborn. He had a breech delivery. There was nothing unusual in his postnatal status. There were no convulsions. He was toilet-trained at about 1 year and began to talk at about 18 months. He sat well, and no abnormality was suspected until his failure to walk at two years. At that time he was admitted to the hospital for a diagnostic work-up; the parents were advised that nothing wrong could be found. At examination the patient appeared well developed, rather fat, and bright. There was no deficiency of eyesight, hearing, speech or the upper extremities. He made a few progression movements in supported walking, but the legs seemed very weak. Muscle testing indicated the weakness to be of generalized distribution in the lower extremities. There was no atrophy. Spasticity was not a prominent feature, although a clonus could be obtained in the left ankle and the feet tended to exhibit a Babinski sign. The impression was—"paraplegia, of mixed spastic and flaccid type; etiology undetermined."

At 4 years the child was responding well to in-patient treatment. At first he showed resentment at not being carried as he was at home; he stated, "Don't you know I am too sick to walk?" He walked with crutches (no braces) and enjoyed prolonged periods at the standing table. At examination slight overflow movements were observed in the fingers with stress. The gait (with crutches) was very slow and deliberate but quite steady for 10 to 20 yards. The chief difficulty seemed to be weakness, with difficulty in balancing the trunk and initiating progression movements. The patient occasionally fell. The impression was—"the patient's progress is impressive but not so much due to treatment as to change in his mental outlook."

At 4½ years the patient walked without crutches or braces. At examination the gait was quicker and more secure than formerly but with a side-to-side sway and hyperextension of the lower part of the back. This improved with use of a cane. Muscle testing showed marked weakness in the gluteal groups bilaterally, as well as in the quadriceps and hamstrings. The reflexes (lower extremities) were hyperactive, and bilateral Babinski reflex was present. The impression was "cerebral palsy, chiefly with marked flaccid weakness of the hip girdle muscles."

Case 6.—M. T., a girl 4 years, was referred with the diagnosis of cerebral palsy. She did not seem to understand what was said to her. She had had a full-term, normal delivery with no neonatal abnormalities. She sat up at about 10 months and did not stand till almost 2 years. She first walked at about 28 months and began to use a few words at about 2 years; even now her vocabulary was slight. She was fairly well toilet-trained at 2 years. There were no seizures. She fed herself and assisted with dressing. She played ball and other games with her younger sibling. The patient had been witness to frequent, violent quarrels between the mother and father and at times had been roughly handled by the latter. One Christmas morning the father came home and tore the Christmas tree to pieces; the patient turned white while this was going on. At examination the patient was an attentive but withdrawn child who seemed to hear and understand but was reluctant to carry out simple commands; the facial expression was grave and unchanging. Taken on a tour of the physical therapy department she carefully observed all features of interest but made no attempt to explore or speak. She refused to reach for or play with a ball. After some hesitation she accepted a picture book and leafed through it. Results of the motor examination were entirely normal. Psychometric examination revealed an intelligence level of 3½ years. The impression was—"severe emotional disturbance; no evidence of physical defect."

Case 7.—J. R., a boy 10 months, did not sit or hold up his head. He was the first born of twins (the other child was normal) delivered precipitously at 8 months after a fall which ruptured the membranes. The birth weight was under 4 lb. (1,810 gm.). The patient was kept in the hospital for 15 weeks, receiving oxygen continuously because of feeding difficulties and frequent cyanotic spells. The hospital diagnosis was atelectasis. By comparison with the sibling the mother during the first few months became suspicious of abnormality in the patient. He lacked attentiveness, seemed rigid, and sometimes threw his head into extension. He had no convulsions. At times he tended to lie with his head turned to one side, the arm on this side being straight and the other curled up. He did not hold his hands in front or reach. He had no evident interest in dangled objects. The mother thought the patient saw but was uncertain that he heard. Examination revealed supine habitus with the head held to the right with tonic neck reflex (reversible). There was intermittent partial opisthotonos. The anterior fontanel was almost closed. The patient had no evident interest in his environment. He did not follow with his eyes; there was occasional spontaneous deviation of the eyes with slow nystagmus. He cried when a whistle was blown. There was no vocalization. Blink, sucking, and Moro reflexes were absent. There was universal increase in the muscle tone of the extensor groups, of the rigid type. The reflexes were difficult to evaluate because of rigidity. The head drooped in supported sitting. There was primary optic atrophy on the right and possibly on the left. The impression was—"severe brain damage, diffuse rigidity, mental defect and partial blindness."

CONCLUSION

A method has been outlined for physical examination of the cerebral palsied child. With the data obtained, amplified by special procedures as indicated, the examiner is in a position to establish the accurate diagnostic and prognostic evaluation on which the patient's rehabilitation program must necessarily be based. It is far beyond the scope of this article to describe how evaluation may be reached in every case. Perhaps no clinical condition offers such complexities of interpretation as the variety of disturbances grouped under the term "cerebral palsy." The physician must attempt to acquaint himself not only with the cerebral palsies themselves but with a number of syndromes that lie in bordering territory. A

beginning may be made by tracing the writings of Phelps.[13]

A great deal remains to be learned about cerebral palsy —its causes, pathology, and treatment. The increased attention which cerebral palsy is receiving holds promise that significant advances will soon be made in all these categories and, it is hoped, in the early recognition of the condition by practicing physicians. So far as the individual patient is concerned, even with present knowledge the outlook for improvement is brighter than at any time in the past. For the physician who undertakes to assist the progress of the cerebral palsied child, the initial step is a thorough appraisal of the patient in terms of his background and development, and of his sensory, motor, and intellectual assets. Not only will the best interests of the individual patient be served thereby, but the physician will help to guide into fruitful channels the ever-increasing volume of lay and legislative assistance for cerebral palsied children in general.

85 Trumbull St.

13. Phelps, W. M.: Treatment of Cerebral Palsies, J. Bone & Joint Surg. **22**: 1004 (Oct.) 1940. Phelps, W. M.: Rehabilitation of Cerebral Palsy, South. M. J. **34**: 770 (July) 1941. Phelps, W. M.: The Differential Characteristics of Spasticity and Athetosis in Relation to Therapeutic Measures, New York J. Med. **41**: 1827 (Sept. 15) 1941. Phelps, W. M.: Recent Trends in Cerebral Palsy, Arch. Phys. Therap. **23**: 332 (June) 1942. Phelps, W. M.: Cerebral Palsy, J. Iowa M. Soc. **38**: 509 (Dec.) 1948. Phelps.[6]

PUBLIC HEALTH AND MEDICAL CARE FOR THE COMMUNITY AND THE INDIVIDUAL

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The term "health services" has been so generally used in this and previous Rural Health Conferences to describe or refer to organized provision for the sick that the true meaning of public health services has been quite overlooked or entirely disregarded.

Medical care of the sick is, of course, the primary object of the practice of personal and family medicine, the relief of suffering, pain, disability, anxiety, and fear of death being the purpose of diagnosis and treatment by the physician. In spite of irregular or uneven distribution of physicians to the disadvantage of small, scattered rural population groups as compared with large cities and metropolitan populations, there are but few of our people who cannot obtain medical care of good quality. No other nation has so liberal a ratio of physicians and hospital beds in proportion to the population at large as we have, and these ratios are steadily rising. It is to be understood that beyond the immediate purpose of relieving pain, fever, suffering, and the fears and anxieties of the sick, there is the object of returning the patient as promptly as possible to a state of health, to self-support, to gainful occupation, or at least to such well-being as age and the permanent handicaps of disease and injury permit.

But these two fields of medical care are not all that is included in personal medical service because the physician in general practice or in the specialties of clinical medicine concerns himself also with the prevention of disease, and the guidance of mother, child, and others of the family in the ways of healthy living at all ages.

These are the preventive services increasingly emphasized in the teaching of medical students and in the relations between the physician and his patients.

Thus it is fair enough to speak of medical care—whether at the patient's home, at the doctor's office, or at the hospital or outpatient center—as a health service if we are concerned solely with the individual or family which seeks the advice, the medical or surgical skill, or the guidance of their physician of choice or of the medical group with which their cooperative association has contract or agreement for medical attention.

We know that what we want is the best that the science and art of medicine can bring to the care of the sick. We know our failures in quality, quantity, and distribution of such medical care. We are making progress not only in the discovery of new means of early and accurate diagnosis and more nearly specific treatment of disease and injury, but in practical and economical ways of putting our knowledge and skills to work for the benefit of all who need them.

Never was there such good promise of our reaching an ideal of good medical care for all, at a cost within their individual or collective means.

THE FIELD OF PUBLIC HEALTH SERVICES

The primary distinction between medical care as above described and what is properly called public health services is that in the former all attention, devotion, skill, and resources are focused on the particular person whose suffering calls on the conscience and on all humanitarian motives for attention. This is the oldest, best developed, and most mature and successful of the uses of medical art and science.

What then of the relatively young, the immature, the still but partly developed field of public health services? These services consist of the application of the sciences of preventive medicine through government or with its authority for social ends. Here we are concerned not with the individual but with the community—the group or aggregate of people living under some unit of local government, or within a state or nation, a province or dominion.

In public health the servants of science are employees of government, not engaged to meet the momentary and personal necessities of a case of sickness, but to apply knowledge to prevention of disease as it affects the people as a whole.

The actual continuous use of an executive department of civil government to protect the people against disease

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is hardly a hundred years old anywhere in our modern or occidental world. Emergencies of epidemic disease were once met by decree or law, forgotten as soon as pestilence had passed. Temporary measures were taken to meet a public fear or demand, but not until the middle of the last century did civil government enter the field of medical science and use its broad powers of authority and education to abate or control disease known to be practically preventable.

And yet, what is the present record of accomplishment in these our United States of today? Briefly, the facts are that at least 40 million of our fellows, our neighbors, live in local government jurisdictions, such as cities, towns, villages, counties, parishes, and boroughs, where there are no full-time professionally directed local public health services. Furthermore, not more than 5% of our people live in communities where the ratio of public health nurses, sanitarians, and other essential public health personnel to the population is adequate to carry out the modest function of good basic public health protection.

The fact is that in this conference and at its predecessors the field of public health has been almost wholly neglected while emphasis has been concentrated on medical care which has masqueraded under the deceptive and misleading title of "health services."

The sick we shall have always with us. Our hearts and hands, our minds and desires, will always be at their call. But why do we tolerate preventable disease? How can we reconcile our knowledge of the practical means of prevention with our neglect to make the facts understood and applied?

More doctors for the sick and more hospital beds will not materially reduce sickness and death from the great mass of preventable diseases of nutritional, communicable, and occupational character.

It rests with our actions as members of responsible local government, as citizens with votes, as property owners paying taxes, to decide whether we are to go on spending enormous sums for capital investments in institutions for the sick, or will meet the modest costs of preventive services which we can guarantee will reduce sickness, its present penalties, and future costs. Are we intelligent in spending from 10 to 20 times as much on medical care of the sick as we do on public health services that will reduce greatly the cost of medical care?

What are these public health services which can claim such potentialities, such benefits to the sick and well? What do we mean by an executive branch of local government devoted to applying the sciences of preventive medicine for social ends?

Why must local government be urged to concern itself with prevention, when we know it cannot be safely trusted with the direction and control of personal services to the sick?

Why do we crusade against compulsory medical care insurance under federal management and extol the obvious social benefits from the exercise of the only two resources of local government for the prevention of disease, the development of health, and the postponement of death, namely, authority of sanitary law and the persuasive influence of public health education?

THE SIX BASIC PURLIC HEALTH FUNCTIONS

Permit me to answer these rhetorical questions by a brief description of what is meant today by local public health services, for this is what is being taught in our schools of medicine and public health and is practiced wherever a local health department is directed by professionally qualified health officers and staffed by sanitary, nurse, laboratory, statistical, and accessory technical and clerical personnel, and these have been supported by suitable tax appropriations.

I speak only of those functions of local government which neither the physician in private practice, the men and women of the community, nor any other department of government than the health department can perform competently.

Each of the six basic public health functions is indispensable to the practicable use of the sciences of preventive medicine. No one of these can be omitted without sacrifice of one or more of the remaining five. Each requires special education, practical training experience, and a devotion to the public interest quite comparable with the qualifications of physicians, nurses, and others concerned with care of the sick.

The four public health service functions first developed expressed the authoritarian or police power of government, and these four alone constituted the activities of practically all health departments up to the end of the 19th century. They are still of major basic importance and will probably remain so for the foreseeable future. The last two to develop involve primarily the principles and policies of education, that form of information and reasoning that leads to voluntary motives and action which have for their end-purpose better health for the individual, the family, and the community.

These six basic functions of local health departments constitute the substance, and substantially the whole of modern public health services. These are services for prevention of disease and the protection and promotion of the health of the whole community. These do not include the provision or operation of services for medical care except in certain communicable diseases for which chief responsibility falls upon the health department at least until such care is as well provided under private or institutional auspices.

Let me name these six functions and then deal with them separately.

1. Registration of births, deaths, and notifiable diseases.
2. Control of communicable diseases.
3. Control of environmental sanitation.
4. Provision of public health laboratory services.
5. Protection and guidance of the health of mothers, infants, and children through the years of elementary and high schools.
6. Public health education.

1. *Vital Statistics.*—These require the reporting, tabulation, analysis, and interpretation, and, if necessary, also the publication of rates and trends in natality, morbidity, and mortality. Only the government of sovereign states such as ours can require and enforce such record keeping as will constitute an accounting of human life. Without such a system, preferably with the primary registry of records in the office and under the direct authority of the health department, no reliable knowl-

edge of the prevalence and distribution of disease and the causes of death can be had, and no competent estimate can be made as to the results of measures intended for prevention or relative control of at least the preventable diseases and their chief causative factors.

You will admit that it is of wide social concern that we know of the births of babies invariably and promptly so that the hazards to life of the newborn may be reduced to the minimum.

A report of death if promptly made to the health officer may lead to immediate measures which will prevent a similar misfortune to others unaware of the preventable nature of their own occupational hazards. Without exact, prompt, and universal reporting of the notifiable diseases of communicable, occupational, nutritional, and other categories, the health officer is frustrated in applying measures applicable to the whole community.

2. *Communicable Disease Control.*—Only brief reference need be made to the control of communicable diseases, both those of acute nature in childhood and the diseases commonly of long duration and characterized by the presence of chronic carriers and spreaders throughout the community, such as tuberculosis, syphilis, malaria, amebic dysentery, and others. This is better understood to be a public responsibility than are some other public health functions. Here have been our most dramatic triumphs and in these diseases the cooperation between physicians, their patients, and the local health department has been close and most effective.

There is no conflict of interest or rivalry except in the doing well of a job that develops the best in the practice of private medicine and of official public health work.

3. *Environmental Sanitation.*—This is less well understood by the medical profession and the lay public.

The sanitary or public health engineer is an invaluable member of the interprofessional team that is the local health department. Without this nonmedical but biologically wise and public-health-trained sanitary leader and his field staff of inspector sanitarians, a health department's work will be relatively incomplete and incompetent, however good the medical health officer may be.

Every factor in the environment of man is potentially a hazard or a beneficient resource. It is the duty of the sanitary staff to reduce the hazards and develop the benefits of the environment in the interest of human development and survival.

The chief factors of environment to be controlled are air, water, food, and the occupational surroundings of working men and women.

We owe so much to the chlorination of our water, purification of sewage, pasteurization of milk, supervision of trade in edible shellfish, and prevention of damage from dust, fumes, and poisonous contacts in shops and factories that only the ignorant and money-stingy will withhold support for a strong sanitary section under high-grade professional leadership in every local health department serving a population of 50,000 or more.

4. *The Public Health Laboratory.*—This laboratory provides for such verification, correction, and identification of communicable diseases in man and animals as permit quick and reasonable control with the least inconvenience to patients, their attending physicians, and the public at large. Epidemiology, the science of group expression of disease whether communicable or of other origin, depends on the public health laboratory for its critical and identifying tests of disease sources of infection and modes of transmission. Analysis of water and food, especially milk and its products, requires experts in bacteriology and chemistry, and equipment and experience not commonly available in hospital or other laboratories concerned with care of the sick.

The laboratory of a health department not only offers its services freely to all physicians, but requires the submission of samples for examination necessary to correct or control a preventable source of infection or of contamination.

Environmental sanitation, communicable disease control, and much of the discovery and prevention of occupational and nutritional diseases depend on the integrity, skill, and alert competence of the public health laboratories of local and state governments.

These four functions rest on a solid background of statute law and local ordinances of boards of health, and the courts of all jurisdictions—up to the highest in the states and the nation—have, with a few rare and unimportant exceptions, supported the health department where its authority was challenged.

The reason for the almost invariable support of health authority has been the conservative attitude of health officers and boards of health in using legal authority so obviously in the public interest.

5. *Maternity and Child Hygiene.*—These are perhaps of greater concern to any nation than are any other problems of public health and preventive medicine. Everyone is more or less directly concerned with the replacement of the aging, passing generation by the new, the young, the oncoming population. We are determined to see that childbirth is accompanied with the least possible loss of mothers and infants, and that in the most vulnerable of all ages of mankind, the first days, weeks, months, and years of infancy, the irreducible minimum wastage of lives occurs. Obviously these goals cannot be reached through laws or ordinances but only by the guidance of man and woman in the hygiene of marriage, the expectant mother in a healthy way of life, and the rearing of children according to the principles of growth and development based on human biology. Where obstetrical and pediatric practice is of a high order and families seek for themselves such excellent care as is now widely available, there is little for a health department to do but to make sure that the means of protecting mothers and babies are known and used.

When the child joins a nursery class, a kindergarten, and presently enters on required elementary school education, public supervision of the child's health is needed, preferably only to supplement and reinforce the supervision intelligent parents obtain systematically from their own family physician. The doctors and nurses of the health department protect the school child against sanitary hazards of school and food practices, against the neglect of remediable defects of body and handicaps of mind and behavior patterns, and provide for medical

examinations of such children that have not been so examined by the family physician. All this is in the interest of bringing the child to maturity best fitted in body and mind to put to use the education he has received at the schools until he is ready for employment or higher education. The first bureau of child hygiene in a local health department in this country was established in New York City in 1912. No local or state department of health in the modern sense can satisfy the people it serves without a well-developed division or bureau dealing with the health of mothers and children.

6. *Public Health Education.*—This field closes our list of basic public health services. Public health education was begun in New York City in 1914 under the late Dr. Charles F. Bolduan and now is provided for widely, if not universally, in all full-time health organizations by persons trained in educational methods, and is shared in by every member of the health department from the health officer to the office clerk.

COMMENT

The whole purpose of public health services is to put the knowledge of preventive medicine, of personal hygiene, and of environmental sanitation to work by all capable of understanding and following the teachings of human biology.

Public education, information, and guidance are the foundation of personal and community understanding of self-protection and self-development. Public health cannot be given to a community or bought by people as a commodity.

Health is the end-product of inheritance, environment, and intelligent management of our individual lives. Health depends on character at least as much as on knowledge.

The department of public health of a modern American community is that instrument of society devoted to realizing the benefits of the sciences of preventive medicine for its own community.

The quality of public health services provided by local government is the best index of the intelligence and imagination of the people of any community.

CONCLUSIONS

The prevention of disease, the development of health of body and mind among the people, and postponement of death are three goals of public health, and these will bring economy of life, thrift in the expenditure of public money, and a reduction in our present large losses in life and wealth from preventable diseases and accidents.

As an immediate objective of this Conference on Rural Health, let me recommend that you commit yourselves to complete coverage of our nation with local health services, professionally directed, adequately supported, and with trained personnel in sufficient proportion to the population of the local jurisdiction of government. Communities of less than 50,000 persons can rarely afford a good local health department. Cooperative arrangements within and between adjacent counties for the purpose of supporting a good local health department are authorized by all but five of our states.

Public health nurses are needed in the ratio of not less than one per 5,000 of the population. Sanitarians are needed in the ratio of one to each 10,000 to 15,000 of the population.

The cost of a good local health department is not less than $1.50 per capita of the population per annum at present inflationary prices. In some areas the cost will be at least $2.00 per capita. Compare this with what you spend annually for medical care for sickness, much of which need not have occurred.

Without nation-wide coverage with good-quality local public health services we shall be losing the greatest benefits of the advancing knowledge of preventive medicine.

156 East 79th St.

CLINICAL NOTES

SKIN SCRAPINGS IN LEPROSY

POSITIVE RESULTS BY THE WAYSON TECHNIQUE IN EIGHTY-FOUR SUPPOSEDLY ARRESTED CASES

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In recent years increasing importance is being attached to the bacteriological status of persons with leprosy. This trend is world-wide and is gradually limiting isolation to only those patients who are bacteriologically positive. Unfortunately, no clear definition of what constitutes a state of bacteriological negativity has been forthcoming. Under such circumstances it is likely that patients will be considered negative after a single attempt to demonstrate organisms. Skin scrapings at best provide but a poor sample of what is occurring in the patient's skin, and this technique is fraught with all the disadvantages of all other sampling techniques. Thus, to attribute exclusive significance to such a procedure, disregarding clinical findings, appears to be extremely hazardous.

Skin scrapings using the Wayson technique [1] were performed on 84 patients who had been considered bacteriologically negative and otherwise qualified for release from the hospital. These patients had had negative skin scrapings at not less than monthly intervals for at least one year. While but a single attempt was made to demonstrate the presence of Myobacterium leprae by the Wayson method, M. leprae was found in 19 of the 84 cases previously considered as apparently arrested.

The number in whom bacilli were found becomes even more significant if those patients in whom only inactive macules and neurological residuals could be demonstrated are subtracted from the total. It is completely legitimate to remove these patients from the total, since

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1. Dr. Newton E. Wayson, United States Public Health Service (Retired), personally instructed me in the use of this technique. He had developed and modified it from previous methods during his assignment from 1927 to 1935 as medical director at the United States Leprosy Investigation Station, Honolulu, T. H.

M. leprae can be demonstrated very infrequently in the skin of such patients, regardless of the methods used. Thus, when the 25 patients with neural damage who had been considered negative are subtracted from the total of 84, a total of 59 patients remain to be considered. Of these 59, M. leprae was found in 19.

The important difference between the Wayson technique and the one previously used is that the sample of tissue is obtained from the entire thickness of the skin rather than from only the superficial layers. In addition, considerable effort is made to minimize dilution of the tissue sample with blood and tissue juices.

WAYSON TECHNIQUE OF SKIN SCRAPING

The area of skin to be examined is pinched tightly between the thumb and forefinger of the left hand. Pressure is applied long enough to blanch the skin. An incision is then made with a corner of a single-edged razor blade through the full thickness of the skin that is being held between the fingers. The incision need not be more than 5 mm. in length and is usually about 3 to 5 mm. in depth; however, great care should be exercised not to enter the fatty subcutaneous tissue. After the incision is made the razor blade is then rotated about 70 to 90 degrees and one surface of the incision scraped as the razor blade is brought back to the starting point of the incision. The entire procedure is accomplished rapidly in three motions. An effort is made to obtain a maximum amount of tissue, which, of course, is relatively small, with a minimum amount of dilution by tissue juice and blood. The material obtained by the "snip" is then carefully spread on a new (never used previously) glass slide, stained, and examined in its entirety. The smear should reveal numerous clumps of epithelial cells, and, if these cells are not present in rather large numbers, the snip should be considered inadequate and of relatively little value unless positive.

COMMENT

That the difference in the results obtained is almost wholly due to the difference in the technique of skin scraping, rather than to any other factor, is likely for the following reasons. There had been little if any change in the patients' clinical condition since they had been placed in the "apparently arrested" category. Well-trained personnel were available at all times to select the most favorable sites for scraping. All slides, both before and during this study, were stained and examined by the same highly trained microscopist. As an additional check, all patients who had shown M. leprae were rechecked by the formerly used technique at the sites found positive by the Wayson method. In spite of the fact that these sites were known in advance to be positive, it was possible to demonstrate M. leprae by the old technique in only four patients.

The significance of the number of positive skin scrapings obtained by the Wayson technique is even greater when it is appreciated that this number of positive results was obtained after only one attempt. Several of these patients had been examined repeatedly for many years with negative results, and the remainder had been bacteriologically negative at monthly intervals for at least one year.

Of the several factors that determine the positivity or negativity of a skin scraping the following are extremely important: 1. The number of organisms present in the skin. 2. The thoroughness with which the preparation is examined. 3. The site chosen for sampling. Determination of the sites most likely to demonstrate organisms requires a thorough clinical knowledge of leprosy. This point is generally under-emphasized. 4. The technique of performing skin scraping. The importance of this factor is not thoroughly appreciated, and it is for this reason that this study was reported.

CONCLUSIONS

1. Skin scrapings obtained from the entire thickness of the skin are superior to those obtained from the superficial layers. This is especially true in patients in whom but few organisms can be demonstrated.

2. To place confidence in negative skin scrapings without strict qualifications regarding the technique used, the qualifications of the person performing the tests, and, most important, the clinical condition of the patient appears extremely hazardous.

U. S. Marine Hospital.

AGRANULOCYTOSIS OCCURRING DURING METHIMAZOLE ("TAPAZOLE") THERAPY

REPORT OF A CASE

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and
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A relatively new substance, methimazole, or 1-methyl-2-mercaptoimidazole ("tapazole"), has been reported by Stanley and Astwood [1] and Reveno and Rosenbaum [2] to be an effective antithyroid drug. Methimazole acts in a manner similar to, if not identical with, thiourea and thiouracil and their derivatives, i. e., it prevents the binding of iodine to protein in the thyroid gland. Its potency as determined by Stanley and Astwood [3] is considerably greater than either thiouracil or propylthiouracil. In experiments utilizing I^{131} these workers demonstrated that methimazole may be as much as 100 times as potent as thiouracil in the prevention of the binding of iodine to protein in the thyroid gland.

The optimal dose of this new compound remains to be established. It probably depends to a large extent on the individual patient. Reveno and Rosenbaum reported doses of 6 to 9 mg. per day to be effective, whereas Stanley and Astwood used up to 60 mg. per day. Both reports stress the effectiveness of the drug.

As far as we have been able to determine, no instances of major toxic reactions due to methimazole had been reported up to Jan. 1, 1951. The purpose of this report is to record a case of agranulocytosis occurring during clinical trial of methimazole in hyperthyroidism.

From the Department of Medicine, University of Colorado.

The methimazole ("tapazole") was supplied by Dr. D. C. Hines of the Eli Lilly Research Laboratories.

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REPORT OF A CASE

Mrs. B. C., a 65-year-old white woman, was admitted to the Colorado General Hospital, June 16, 1950, complaining of anorexia, dysphagia, and weight loss. She stated that she had been well until March, 1950, when she noted the onset of pain over the lumbar spine. This was followed shortly by nervousness, weakness, and tremor. Her physician prescribed sedative medications, which considerably enhanced her feeling of well-being. However, her symptoms progressed, and dysarthria and dysphagia developed. By July, 1950, she had lost 35 lb. (16 kg.). A review of symptoms revealed that marked heat intolerance, severe tremor of the hands, and intermittent watery diarrhea had been present since the onset of her illness. She stated she had had a goiter for many years, but denied any symptoms suggestive of hyperthyroidism prior to the present illness. The remainder of the history was not contributory.

Physical examination on admission revealed a dehydrated, acutely ill white woman. Her skin was warm, moist, and of smooth texture. Examination of the eyes, ears, nose, and throat revealed no abnormalities except moderate tortuosity and narrowing of the retinal arterioles. The thyroid was diffusely enlarged, and two small nodules, about 1 cm. in diameter, were palpable in the isthmus. A definite bruit of moderate intensity was audible over the thyroid. Indirect laryngoscopy revealed laryngitis sicca, but the vocal cords moved normally. The thorax was symmetrical, and the lungs were clear to percussion and auscultation. The blood pressure was 152 systolic and 86 diastolic; the pulse rate was 88 per minute; the rhythm was regular. The heart was not enlarged, and no murmurs were heard. Examination of the abdomen and pelvis revealed no abnormality. There was a rapid, fine tremor of the hands and slight pitting pretibial edema. Results of the neurological examination were within normal limits.

Daily White Blood Cell Count

Date	Total Leukocytes	Polymorphonuclear Cells	Lymphocytes	Monocytes
12/15/50*	1,900	0	76%	21%
12/16/50	2,850	0	79%	21%
12/17/50†	3,400	0	90%	9%
12/18/50	1,700	7%	69%	24%
12/19/50	3,800	40%	41%	19%
12/20/50	4,200	50%	41%	9%
12/22/50	10,700	70%	23%	7%
12/23/50	8,300	68%	29%	3%

* There were 3% unidentified cells on this date.
† On this date there were 1% plasma cells.

Urinalysis showed a trace of albumin but no sugar or acetone; there were no abnormal formed elements. A complete blood count revealed a hemoglobin level of 13.8 gm. per 100 cc., 4,500,000 red blood cells, 12,000 white blood cells, with 76% polymorphonuclear cells, 18% lymphocytes, 3% monocytes, and 3% eosinophils. The Wassermann reaction was negative. The erythrocyte sedimentation rate (Westergren) was 22 mm. per hour. Results of blood chemistry studies were as follows: nonprotein nitrogen 25 mg., cholesterol 152 mg., serum calcium 9.1 mg., serum protein 4.82 gm., albumin 2.42 gm. and globulin 2.40 gm. per 100 cc., and serum alkaline phosphatase 6.9 Bodansky units. The blood and bone marrow were negative for aerobic and anaerobic pathogens, and the bone marrow was also negative for acid-fast bacilli. A sulfobromophthalein sodium test showed 44% of the dye retained in one hour. The basal metabolic rate on August 21 was +37% and on August 28, +52%. X-ray examination of the cervical, dorsal, and lumbar spine showed a moderate degree of hypertrophic osteoarthritis and generalized demineralization of the bones. Roentgenograms of the chest, skull, abdomen, and gastrointestinal tract revealed no abnormality. A barium enema revealed no abnormality. An intravenous pyelogram was normal. Bone marrow aspirated from the iliac crest showed a moderate hyperplasia of all elements but was otherwise normal.

On August 28 treatment with 300 mg. propylthiouracil daily was started. On September 2 the patient was discharged to a convalescent home. She returned to the outpatient clinic on September 21, at which time extreme weakness, a marked tremor, and emaciation were noted. The pulse was regular at 144 per minute. She complained at this time of pain and immobility of the right shoulder, but x-ray examination at that time revealed only demineralization of the humerus and right scapula. She was advised to have physical therapy and to return after a basal metabolism test. The basal metabolic rate on September 27 was +45% and the blood cholesterol level was 137 mg. per 100 cc. Examination revealed her pulse to be regular at 120 per minute; marked emaciation, heat intolerance, and tremor were still present.

On inquiry at the convalescent home it was discovered that, by error, all of her medications had been discontinued on September 12. Therefore, she was given methimazole, 10 mg. every eight hours, thiamine hydrochloride 5 mg. three times daily, and elixir of phenobarbital 4 cc. three times daily. She had not received any medication for 41 days at that time. The white blood cell count at that time was 5,400; a differential count was not done. The basal metabolic rate on October 24 was reported as +53%. She next returned to the clinic on November 13, at which time the basal metabolic rate was reported as +58%. On November 27, there was again some clinical improvement, although the basal metabolic rate was reported as +69% and the blood cholesterol 167 mg. per 100 cc. At this time the dose of methimazole was increased to 20 mg. administered every eight hours. On December 11 the basal metabolic rate was reported as +58%. The patient, however, was very much improved subjectively and was strong enough to walk. A blood cell count was requested on this day but was not done.

On December 14 the patient was brought to the emergency room of Colorado General Hospital, because the preceding day diarrhea, chills, and a temperature of 104 F orally had developed. At this time the salient physical findings were as follows: The patient was moderately emaciated, with a rather marked tremor of the hands. She was somewhat somnolent and disoriented. Her temperature was 103 F by mouth, the pulse rate 100, the blood pressure 120/70, and respirations 24. There were no abnormal eye signs. A small ulcerated area was present in the pharynx. The thyroid was diffusely enlarged; no bruit was audible. There was no nuchal rigidity. The lungs were clear to percussion and auscultation, and there was no change in the cardiac status from previous examination. The liver was 1 cm. below the costal margin, there was no abdominal tenderness, and the spleen was not palpable. The skin showed a diffuse mottled erythema. Results of the neurological examination were not remarkable. The white blood cell count was reported as 3,850 per cubic millimeter, with 82% lymphocytes and 18% monocytes.

The patient was immediately hospitalized and placed on the following regimen: penicillin, 100,000 units intramuscularly every three hours, terramycin, 250 mg. orally every four hours, folic acid 5 mg. three times daily, cortisone, 100 mg. intramuscularly daily. Phenobarbital, thiamine, and methimazole were discontinued. Examination by bone marrow aspiration on December 15 showed a marked relative increase in the erythroid and lymphocytic series, which was thought to be due to the almost complete absence of granulocytes and granulocyte percursors. Only an occasional myelocyte and a very rare promyelocyte were seen. This picture was interpreted as indicative of agranulocytosis. Daily white blood cell counts are shown in the table.

During the first four days of this hospitalization period, the patient was acutely ill, with temperatures ranging from 102 to 104 F. On December 16 her heart rate was found to be very rapid and irregular, and an electrocardiogram revealed auricular fibrillation. She was therefore given digitoxin, 1.6 mg. in divided dosage, and an electrocardiogram on December 21 showed that she had a normal sinus rhythm. On the fourth hospital day the temperature fell to normal; after this, she showed gradual symptomatic improvement. Basal metabolism tests gave the following results: Dec. 27, 1950, +34%; Jan. 6, 1951, +36%; and Jan. 10 +53%. The patient was given strong iodine (Lugol's solution) from January 6 to 15, in preparation for surgery. On January 15 a subtotal thyroidectomy was performed. The patient

then began to show gradual improvement and weight gain. She was discharged from the hospital on February 3; subsequent outpatient clinic visits have shown good healing of the wound and continued weight gain. Tremor, heat intolerance, and nervousness have disappeared, and the patient is fully ambulatory.

COMMENT

Admittedly, from the evidence at hand we cannot be certain that the agranulocytosis which occurred in this patient was due to methimazole. However, because of the course of events and the fact that the other antithyroid drugs are known to produce agranulocytosis, we consider it fair to assume that the condition in this patient was due to the drug. We did not readminister the drug in order to reproduce a recurrence of agranulocytosis because we consider such a procedure too dangerous.

Agranulocytosis as a manifestation of toxicity of the thioureas and related drugs has been reported to occur with varying frequency, depending on the compound used. On the basis of experience thus far, it seems unlikely that any potent antithyroid drug will be completely free of this complication. However, while agranulocytosis was a serious problem when thiouracil was being widely used, the introduction of propylthiouracil appears to have greatly reduced the danger. To our knowledge Juliar and Harris [4] have reported the only fatal case of agranulocytosis due to propylthiouracil. Bartels [5] has reported that, of 672 patients treated with propylthiouracil by him, agranulocytosis appeared in only three, none of whom died. Thus, the frequency of agranulocytosis appears to be less than the mortality of thyroidectomy in thyrotoxicosis. The incidence of this complication with the use of methimazole cannot be determined at present, since relatively few patients have received the drug.

Frequent white blood cell counts generally are recommended for the early detection of leukopenia and the prevention of agranulocytosis during drug therapy. There are two major considerations that should determine the necessity of frequent blood cell counts. The first is, of course, whether agranulocytosis occurs with sufficient frequency as a result of therapy of any given drug to warrant expenditure of the additional time and expense involved. Some workers [6] are of the opinion that, when one is using propylthiouracil, the threat of agranulocytosis is so slight that frequent routine blood cell counts are not necessary and that determination of the white blood cell count is required only with the occurrence of fever or sore throat. The second consideration is whether frequent blood cell counts will anticipate the occurrence of agranulocytosis. This concept has been questioned by Young,[7] who has shown that, in some cases at least, the peripheral blood reflects the changes going on in the marrow only after the changes in the marrow are far advanced. He states, therefore, that frequent blood cell counts are uninformative and unnecessary. There is, however, no general agreement on this point, and much further work is necessary before the final answer to the problem will be clear. However, on the basis of our experience, we would recommend that frequent white blood cell counts be performed during methimazole therapy, although we cannot be certain that frequent counts give warning of impending agranulocytosis.

SUMMARY

A case of nonfatal agranulocytosis occurring during administration of a relatively new antithyroid drug, methimazole, or 1-methyl-2-mercaptoimidazole ("tapazole"), is reported.

400 Burns Bldg. (Dr. Croke).

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CANICOLA FEVER

REPORT OF A CASE IN WHICH AUREOMYCIN AND PENICILLIN WERE USED

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Twelve years ago the first human case of canicola fever in this country was reported.[1] The disease is described as an acute febrile illness caused by infection with Leptospira canicola. Since then case reports have become more numerous,[2] and in 1946 the literature was reviewed by Rosenbaum.[3] The case presented in this paper is reported in order to reemphasize the more frequent occurrence in the United States of a once exotic disease and to indicate the clinical effectiveness of aureomycin in treatment of it.

REPORT OF CASE

On April 21, 1950, G. A., a 71-year-old Armenian, entered the Henry Ford Hospital via the emergency room, too ill to give any history. Relatives related that the patient had been well until five days prior to admission. At that time he appeared lethargic and had a productive cough; on one occasion blood was noted. Three days prior to admission his urine was the color of dark tea, but no jaundice and no clay-colored stools were noted. Neither fever nor chills were present. A systemic review revealed nothing significant except anorexia. Two days prior to admission the patient became disoriented and incontinent of urine. The patient's past history was noncontributory except for malaria contracted while he was living in Armenia.

Physical examination revealed an acutely ill, moderately dehydrated elderly man who was unable to answer direct questions. The temperature was 101 F rectally, pulse rate 120, and

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Mrs. Norma Broom of the Detroit Department of Health performed the leptospiral agglutination tests.

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respiration rate 32 per minute. Breathing was labored. The skin and scleras were icteric. Funduscopic examination was inadequate because of senile cataracts. The pharynx was moderately injected. There was no lymphadenopathy. The chest examination revealed moderate emphysema but no splinting. There were many moist rales at the base of the right lung posteriorly, with harsh breath sounds but no percussion impairment. Blood pressure was 124 systolic and 78 diastolic. The findings of the heart examination were within normal limits. The abdomen was distended and tympanitic, with hypoactive bowel sounds. No masses or organs were palpable. There was tenderness on percussion over the liver. Rectal examination was noncontributory. Neurologic examination demonstrated the classic findings of Parkinsonism. The working diagnosis upon admission was infectious hepatitis with pneumonitis.

The results of initial laboratory studies were as follows: Hemoglobin, 13.7 gm. per 100 cc.; red blood cell count, 4,200,000; white blood cell count, 19,350, with 93% polymorphonuclear leukocytes; nonprotein nitrogen, 35 mg. per 100 cc., and sugar, 129 mg. The Van den Bergh test showed 5.6 mg. of total bilirubin and 3.6 mg. of direct bilirubin. The Kline exclusion test gave a negative result. It was felt that the marked leukocytosis was against the diagnosis of infectious hepatitis. Twenty-four hours later the white blood cell count was 18,750, with 89% polymorphonuclear leukocytes.

On the second hospital day further history revealed that the patient lived in a neighborhood infested with rats. No rat bite was evident. Canine contact was denied. The hospital course was characterized by continued toxicity, severe frontal headache, and generalized myalgia, not notably localized to the calf muscles. On the third hospital day severe hemorrhagic conjunctivitis developed, while the icterus was apparently fading. At this point, laboratory studies to establish the diagnosis of Weil's disease were undertaken.

Upon admission therapy was instituted immediately with procaine penicillin G (crysticillin®), 300,000 units every 12 hours intramuscularly. However, the temperature continued to spike. Because of the possibility of Weil's disease, aureomycin was given on the third hospital day. It was given orally in a dosage of 2 gm. per day for two days, followed by 1 gm. per day. After this therapy the patient's temperature dropped by lysis, and 48 hours later he was afebrile.

Progress laboratory studies revealed gradually diminishing icterus, the serum bilirubin being 0.8 mg. per 100 cc. on the 10th hospital day. Results of a battery of liver function tests were all within normal limits. Serum diastase was 130 mg. per 100 cc. (normal is 50 to 200 mg. per 100 cc.). Two blood cultures and one urine culture were negative. Repeated urinalyses were negative, except for an occasional granular cast and a 1+ reaction for albumin in one specimen. At no time was azotemia present. Stool studies were not remarkable. A lumbar puncture on the seventh hospital day was completely negative for both routine and leptospiral studies. On the 18th hospital day a progress white blood cell count was 11,250, with 78% polymorphonuclears. A sulfobromophthalein (bromsulphalein®) sodium test on the 21st day showed 20% retention in 45 minutes and 17% retention in 60 minutes. A needle biopsy of the liver revealed portal cirrhosis, grade 2.

Blood and urine specimens examined on the fourth and eighth hospital days by the dark-field technique were negative for leptospirae. These specimens were also inoculated into adult guinea pigs. Kidney sections from the inoculated animals stained by the Levaditi method also failed to demonstrate the leptospirae. Kidney emulsions from the first group of guinea pigs injected intraperitoneally into a second group of guinea pigs also gave negative results. However, blood specimens drawn from the patient at the same time as the above tests were made (on the 9th and 13th days of illness) gave positive agglutinations for Lept. canicola in a dilution of 1:1,000 and for Lept. icterohemorrhagiae in a dilution of 1:100. On this basis a diagnosis of canicola fever was felt to be firmly established. A progress agglutination test done 65 days after onset of illness was positive for Lept. canicola in a dilution of 1:300, with a doubtful agglutination at 1:1,000. The agglutination for Lept. icterohemorrhagiae at this time was negative.

The patient's clinical course was one of steady improvement. On the eighth hospital day his first course of aureomycin was discontinued. The total dosage was 7.5 gm. However, on the 13th day there was a recrudescence of fever to 101 F orally. Because of this, aureomycin was instituted again in a dosage of 2 gm. in 14 hours, followed by 1.5 gm. daily. Administration of aureomycin was continued for the remainder of the patient's hospital stay. In spite of apparent complete clinical and laboratory recovery, he continued to run a low-grade fever. He was discharged to convalesce at home on the 25th hospital day, the 30th day of his illness.

COMMENT

It is impossible clinically to differentiate between canicola fever and the commoner Weil's disease, infestation with Lept. icterohemorrhagiae. One has to supplement the clinical picture with serologic and epidemiologic data. No animal other than the dog has been incriminated as a natural reservoir of Lept. canicola, although Molner [2f] feels that rats have not definitely been excluded. In our case no contact with dogs could be elicited, but the patient was known to be living in an area thickly infested with rats. This adds weight to Molner's hypothesis.

Many observers [4] have emphasized certain clinical signs and symptoms somewhat peculiar to leptospirosis, namely, hemorrhagic conjunctivitis and myalgia specifically localized to the gastrocnemius group. It was the appearance of the former in connection with the rest of the clinical picture that first suggested the correct diagnosis to us. Others [5] have pointed out the relative benignity of canicola fever, emphasizing the low mortality as well as the low incidence of renal, cutaneous, and hepatic manifestations. Our case followed this rule, except for the occurrence of jaundice.

We depended for the diagnosis entirely upon the agglutination-lysis test of Schuffner.[6] Samples of blood and urine were examined under dark-field illumination for leptospirae as well as inoculated into guinea pigs without success. It has been suggested [7] that hamsters (Cricetus auratus) be used for inoculation, because of the greater virulence of Lept. canicola for them as well as the relative resistance of guinea pigs to the canicola strain. Our failure to isolate the organism in vivo was probably due to this resistance. The failure of the titer to rise during convalescence was puzzling, until it was brought to our attention that previous experience with aureomycin in leptospirosis presented the same curious phenomenon. The reason for this is not clear at this time but is being studied by another group.

Penicillin therapy was arbitrarily instituted on the patient's admission to the hospital, because of signs of pneumonitis. When the possibility of Weil's disease became apparent, as well as the continuing toxic course in spite of seemingly adequate penicillin dosage, it was felt

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6. Schuffner, W. A. P.: Recent Work on Leptospirosis, Tr. Roy. Soc. Trop. Med. & Hyg. **28**: 7-37, 1934.

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that aureomycin therapy was indicated. Experimentally, it has been shown that aureomycin is at least twice as effective against Leptospira as is penicillin.[8] The rapid defervescence plus the remarkable clinical improvement following aureomycin administration suggested its unusual efficacy as an antileptospiral agent. However, no definite conclusions can be drawn, because penicillin was given concomitantly. The recrudescence of fever in spite of continued clinical improvement indicated to us incomplete eradication of the infection. Therefore, aureomycin was readministered. That this febrile episode may have indicated a natural relapse present in 25% of cases of Weil's disease cannot be dismissed. In spite of seemingly adequate aureomycin therapy, the patient continued to run a low-grade fever. It was felt that this may have been due to the drug. Proof of this is lacking, as the patient was discharged before there had been an adequate period in which to observe him after aureomycin therapy had been discontinued.

Slowly, reports are accumulating showing the effectiveness of aureomycin in cases of human leptospirosis.[9] This has been shown to be the case in experimental leptospirosis.[8] We feel that aureomycin, at present, is the drug of choice in leptospiral infections, and it is suggested that this drug be used exclusively in patients suspected of having leptospirosis, in order to establish definitely its clinical efficacy. Neither optimum daily dosage nor length of course of aureomycin can be suggested from this experience, although 2 gm. per day, given orally and continued for five to seven days after defervescence, appears adequate and safe.

SUMMARY

A patient with canicola fever treated with aureomycin and penicillin is reported. Aureomycin appears to have shown definite antileptospiral activity in human infections, superior to that of penicillin. It is felt that aureomycin is the drug of choice in the treatment of leptospirosis in humans.

8. Heilman, F. R.: Aureomycin in Treatment of Experimental Relapsing Fever and Leptospirosis Icterhemorrhagica (Weil's Disease), Proc. Staff Meet., Mayo Clin. **23**: 569-573, 1948.

9. Batchelor, T. A., and Todd, G. M.: Aureomycin and Penicillin Therapy in Leptospirosis (Weil's Disease), J. A. M. A. **143**: 21-22 (May 6) 1950. Brainerd, H. D.; Linnette, E. H.; Meiklejohn, G.; Bruyn, H. B., Jr., and Clark, W. H.: Symposium on Antibiotics: Clinical Evaluation of Aureomycin, J. Clin. Invest. **28** (pt. 1): 992-1005 (Sept.) 1949.

Ulcerative Colitis and Cancer.—A person who acquires ulcerative colitis in the second decade of life and continues to suffer from active disease until he is 30 faces a real hazard in possible malignant degeneration. The hazard, however, is not in itself sufficiently ominous to demand surgical extirpation of the colon and rectum without other indications. Actually in most cases of persistently active colitis for 10 years or more, the indications for surgery are quite clear even without the added indication of the hazard of cancer. In patients for whom an ileostomy has been necessary, it would seem that the danger of malignant degeneration was sufficient to make total colectomy advisable. Patients who are under medical observation and treatment for chronic ulcerative colitis should be examined at intervals for evidence of malignant degeneration. Much of the value of this policy is mitigated by the frequently observed characteristic that cancer under these circumstances is incurable by the time it has developed to the point at which it can be diagnosed.—Everett D. Kiefer, M.D., Malignant Degeneration in Chronic Ulcerative Colitis, *Gastroenterology*, September, 1951.

TRAUMATIC PERFORATION OF THE COLON IN A PATIENT WITH A COLOSTOMY

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Traumatic perforation of a normal colon following irrigation through a colostomy stoma is an infrequent occurrence. A review of the literature for the last 18 years reveals only one report [1] of a similar complication. Traumatic perforation of the normal colon from foreign bodies, nonpenetrating wounds of the abdominal wall, or compressed air has been reported in the literature more frequently. Since perforation of a normal colon proximate to a colostomy stoma may occur, it is essential that the physician be aware of its possibility and that patients be given detailed instructions for safely irrigating the bowel.

The literature contains many articles on the postoperative care of patients with a colostomy, but little has been written about the proper administration of enemas. There appear to be two ways in which a perforation of a normal colon in such a patient can occur. First, the patient by being rough, may force a stiff tube through the wall of the colon. Second, the intermittent rubbing of the catheter against the same portion of the colon may produce a weakened area and eventually cause perforation, especially when there is an angulation of the colon proximal to the stoma.

A proper method for giving an enema has not been agreed upon. Dr. Vernon David, as quoted by Davis,[1] recommends that the enema catheter be placed through a "hygeia" nipple, in order that regurgitation of the solution be avoided, and that the catheter project from the nipple not more than the thickness of the abdominal wall. Wiley and Sugarbaker [2] recommend that the end of the catheter be lubricated with petrolatum and inserted slowly 6 to 8 in. (15 to 20 cm.) into the colostomy. To prevent a regurgitation of the irrigating fluid from the colostomy stoma, they suggest the use of a "hygeia" nursing nipple" with the end of the nipple cut so that a catheter can be passed snugly through it and then inserted into the colostomy stoma." Lahey [3] suggests that the catheter be well greased and inserted at least 6 in. or, if possible, the full length.

REPORT OF A CASE

N. S., a 70-year-old man, was admitted to the hospital with a history of rectal bleeding of six months' duration. Examination revealed a fungating mass 1 to 2 cm. in diameter, located on the anterior surface of the rectum, 10 cm. from the anal skin margin. A biopsy showed the lesion to be adenocarcinoma. An abdominoperineal resection, including most of the descending colon, was done. The pathological diagnosis was adenocarcinoma of the colon 9 cm. above the anorectal junction.

Three months after the operation the patient returned to the hospital emergency room, giving the following history: He had irrigated his colostomy with an F 18 male catheter that morning

From the Department of Surgery, Chicago Medical School, and Mount Sinai Hospital.

1. Davis, C., Jr.: Enema Tube Perforation of Colon, Ann. Surg. **126**: 377-379 (Sept.) 1947.

2. Wiley, H. M., and Sugarbaker, E. D.: Colostomy, Indications, Technique and Management, Surg., Gynec. & Obst. **91**: 435-446 (Oct.) 1950.

3. Lahey, F. H.: The Truth About Colostomy, Lahey Clin. Bull. **5**: 130-136 (July) 1947.

when he felt something give way. Severe abdominal pains ensued, and he fell to the floor. Examination eight hours after the irrigation showed the patient in shock, with blood pressure of 80/40, pulse rate of 120 per minute, and tenderness throughout the abdomen but no rigidity. Tenderness was especially marked in the area just proximal to the colostomy opening. A few bowel sounds were heard. A scout roentgenogram of the abdomen showed that the stomach was dilated and contained a considerable amount of gas, which is frequently seen in patients in shock. There was no evidence of dilation of the bowel nor of free air in the peritoneal cavity. A diagnosis of perforation of the colon due to the introduction of an enema tube was made and surgery advised.

Approximately 12 hours elapsed between the introduction of the enema tube and the time of surgery. When the abdominal cavity was opened, purulent bloody fluid was found. In the vicinity of the colostomy, many small loops of bowel were found matted together and adherent to the colon near the colostomy opening. The small bowel was separated from the colon, and a perforation on the posteriorlateral wall of the colon about 8 cm. from the colostomy opening was found. Since the perforation, which was in normal colon, could not be closed because of its location, about 10 cm. of the distal colon, including the perforation, was resected and a new colostomy established.

A pathological report was made on the specimen, which consisted of a segment of large intestines 9 cm. in length. At one end it was surrounded by a narrow rim of gray skin forming a colostomy opening. Sections of the colon through the colostomy opening revealed the transition between the normal mucosa and the skin. A few foreign body granulomas were noted in the submucosa and the muscular wall. Section through the perforation at the opposite end of the specimen revealed necrosis of the muscular wall and diffuse infiltration with neutrophilic leukocytes and a few plasma cells. The pathological diagnosis was perforation and acute inflammation.

The patient was discharged from the hospital after a stormy postoperative course, during which pneumonia and an abdominal wall infection developed.

SUMMARY

Perforation of the colon proximal to the colostomy stoma with peritonitis following the administration of an enema is described. Several methods of irrigating the colon are mentioned, but we feel that the method of David is perhaps the safest procedure.

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Vertigo Versus Dizziness.—The symptoms, "vertigo," "dizziness," "blackout," "unsteadiness," "drunkenness," "imbalance" and the like, are among the most frequent met with in medicine. The potential differential diagnostic value of these symptoms seems not to have been realized because of a lack of clarity in the mind of the examining physician as to the exact meaning of these individual terms. The tendency to consider them as synonyms has risen to the detriment of diagnosis. . . .

Proper definition of vertigo as a sense of whirling of the outside world or of the entire individual allows the term to be restricted to sensations arising from the vestibular system, comprised by the end organ, the vestibular nuclei and their central connections.

The term "dizziness," confined to a sense of motion within the head with a dimming of visual and auditory sensation, can be assigned to those symptoms arising from temporary cerebral ischemia, and both vertigo and dizziness can be differentiated from the sensation of unsteadiness produced by incoordination resulting from suppression or irritation of extralabyrinthine equilibrial reflexes. The examiner should never be satisfied with a monoverbal reply but should endeavor to get a clear mental picture of the sensation felt by the patient, because the laity are universally confused as to the meaning of these terms. If this is done, a useful diagnostic tool is secured.—Henry L. Williams, M.D., Vertigo, *Minnesota Medicine*, September, 1951.

COUNCIL ON PHARMACY AND CHEMISTRY

REPORT TO THE COUNCIL

Some years ago the Council issued a report outlining the criteria for acceptance of chemical contraceptive preparations as established by its Advisory Committee on Contraceptives (J. A. M. A. **123**:1046 [Dec. 18] 1943). *The criteria also appear in New and Nonofficial Remedies. The evaluation of contraceptive preparations requires both clinical and laboratory evidence of their spermicidal efficiency. A satisfactory laboratory method previously developed for determining the spermicidal time against human spermatozoa has been employed for the comparison of various products available on the market (Becker, B., and Gamble, C. J.: The Spermicidal Times of Contraceptive Jellies and Creams, 1946,* Human Fertil. **11**:111-114, 1946). *A similar study of products available in 1949 has been recently completed. The Council has authorized publication of the following report of this study submitted by Clarence J. Gamble, M.D., and Lois Hamblin, from the Department of Anatomy, Harvard Medical School. The authors' findings do not affect the status of those products already accepted for inclusion in New and Nonofficial Remedies nor of those not accepted.*

R. T. Stormont, M.D., *Secretary.*

THE SPERMICIDAL TIMES OF CONTRACEPTIVE JELLIES AND CREAMS, 1949

Clinical contraception may be accomplished by any means that will prevent the spermatozoa from reaching and fertilizing the ovum. When the need is permanent, either salpingectomy or vasectomy may be performed. Temporary blockage of the spermatozoal route may be accomplished by the condom. Usually considered more acceptable to both partners for this purpose are the vaginal diaphragm and the cervical cap. Although these cannot be expected to contact the vaginal wall or the cervix tight enough to prevent the passage of so small a body as the spermatozoon, by lengthening the distance which must be traversed from the point of deposition to the os, they increase the duration of exposure to the mildly spermicidal acid secretions of the vagina. The protection given by a hard cervical cap fitting the cervix closely, sometimes worn throughout the intermenstrual period, is probably due to this increase in the spermatozoal route.

For greatest protection, diaphragms and caps should be reinforced by a spermicidal jelly or cream. The semisolid consistency of these materials gives them some obstructive power in addition to that of their chemical make-up. Because the jelly or cream used alone is a simpler method, some physicians consider them more acceptable, and they often are prescribed without mechanical reinforcement. Since the distance the spermatozoa must travel under such circumstances is shorter and the material may be pushed aside, jelly or cream alone presumably is less effective than when combined with the diaphragm.

For greatest reliability, a test of the clinical effectiveness of a contraceptive jelly or cream should be based on the protection secured by a large number of married couples over a number of years. This, however, is difficult to arrange and expensive to record and tabulate. Furthermore, the results are uncertain, since the number of omissions or incorrect uses of the material may not be accurately reported.

Laboratory tests to give indications of the probable effectiveness of contraceptive materials have been based on their two modes of action, the barrier effect and the immobilization of spermatozoa by the toxic ingredients. A partial index of the barrier action lies in the viscosity of the material, which can be measured and compared by the mobilometer, adapted for the purpose by Shedlovsky.[1]

1. Shedlovsky, L.; Belcher, D.; Levenstein, I., and Bodner, H.: Changes on Aging in the Consistency of Some Commercial Contraceptive Jellies, Human Fertil. **8**: 97 (Dec.) 1943.

Clinicians agree that the viscosity of a jelly or cream should be sufficient to prevent it from flowing out of the vagina and from too ready displacement from the os by coital thrusts. It must not, however, be so high as to keep it from flowing into the folds of the vaginal wall or from covering the cervix. Nor should the material be so solid as to constitute lumps lying in the vaginal cavity. These limits include a very wide range within which there is no indication of the values which are most effective clinically. It is hoped that future studies will define more accurately the most protective consistencies.

The power of contraceptive mixtures to immobilize spermatozoa through chemical action is more accessible to study. It is customarily estimated by observing the duration of motility after mixture with human semen. While this has resulted in much information regarding the concentrations of various substances and mixtures needed to immobilize in a given time, little is known regarding the mechanism by which this action occurs. Acids are known to stop motion of spermatozoa. This has led to the use of lactic acid, normally present in the vagina, in many contraceptive mixtures. The effectiveness of other mixtures depends on the action of compounds which have been found to be lethal to the sperms without damaging vaginal or urethral tissues. Glyceryl monoricinoleate, phenylmercuric acetate, ricinoleic acid, sodium lauryl sulfate and trioxymethylene are examples of these, and there are many others. Many of the detergents appear to have effective spermicidal action.

The time required to immobilize the spermatozoa in varying concentrations of many pure substances was determined by Voge.[2] Baker [3] measured the lowest concentration of chemical compounds which, when added to an equal volume of semen, would stop the motion of spermatozoa in 30 minutes. He described a procedure applicable to commercial contraceptive mixtures.[4]

Brown and Gamble [5] used a small quantity of semen (about 40 cu. mm.) for each test, thus allowing multiple comparisons with the same ejaculate. To permit time to differentiate between the more active and the less active materials, dilution was necessary, and they chose the arbitrary ratios of jelly, 1 part; 0.9% NaCl solution, 4 parts; and semen, 5 parts. To expose the spermatozoa to known concentrations, these components were completely mixed, as in most chemical procedures.

The test is unsatisfactory in two respects. It deviates from clinical conditions in that the complete mixing has no counterpart in coitus in which detumescense usually limits stirring after ejaculation. Although there is some dilution due to vaginal fluids, this is probably not uniform, and there is no way of estimating its range.

In spite of these imperfections, it appears reasonable to assume that low spermicidal times are correlated with clinical effectiveness. This test, therefore, has been applied to the contraceptive materials commercially available in the United States,[6] and results with samples secured in 1949 are reported herewith.

METHOD

One volume of contraceptive jelly or cream was mixed with four parts of 0.85% NaCl and kept over-night at 37 C to assure thorough mixing. Using the screw syringe of Richards described by Hudson and Mudd,[7] human semen was drawn into a glass tube of 1.6 mm. internal diameter. About 2 cm. was found to give a convenient volume for a ¾ in. cover glass. The semen was moved about 1 cm. from the end of the tube and the space it had previously occupied was then filled with diluted jelly or cream, a quantity of about 3% less than the semen. The two fluids were mixed on a microscope slide by rapidly forcing them out of the tube and drawing them back in about 30 times. A cover-glass was placed on the mixture and the slide slammed down on the laboratory desk several times to expel most of the air bubbles. These specimens were kept and examined at room temperature.

The preparations were examined with a microscope having a 16 mm. objective and a 10X eyepiece. They were illuminated with a 6 volt, 40 candlepower, clear-glass bulb of the type used for automobile headlights. This was placed 5 or 6 cm. from the specimen so that a line connecting the specimen and the light made an angle of 55 degrees or more with the axis of the microscope. To prevent overheating of the specimen on the microscope stage, a foot switch was provided so that the light was turned on only when needed.

The "spermicidal time" was measured as the time elapsing from mixing until the last visible motion of a spermatozoon. A final search was made for moving spermatozoa by examining each preparation by four passages across the coverslip. Because of the time required for the mixing and a survey of an adequate portion of the mixture, no attempt was made to differentiate times under 5 minutes. In these cases, the result was recorded as "5 minutes or less." If the spermatozoa were still active at the end of 4 hours, the time was recorded as 240+ minutes.

For an indication of the activity of the spermatozoa when tested with a reproducible spermicide, the time for immobilization in each specimen was recorded after the semen had been mixed with an equal quantity of 2.8% potassium acid phthalate.

MATERIALS

Semen was ejaculated into a glass vial and stored in an ice bath until used. When first ejaculated, the semen in many specimens was very viscous. It was not used, therefore, until 60 minutes after ejaculation.

The 11 donors were from 21 to 26 years of age, the average being 22. Specimens were collected not less than three days after a previous ejaculation.

An attempt was made to include all contraceptive jellies and creams available on the United States market. Many were sent by the manufacturers and others purchased through drug stores or mail order houses. For each material for which a spermicidal time of 30 minutes or less was reported, two or more tests were made of a tube secured through a clinic or a retail agency, and these were found to be approximately the same as the measurements originally obtained. While the tests of most of the active materials were limited to two tubes and of the less active to one, significant variations among different samples made from the same formula were rare in this or previous work. No claim is made that the results apply to all tubes bearing the same brand name.

Each manufacturer was asked for the composition of the materials being marketed at the time the samples were secured. The information received is given later in tabular form. The figures represent percentages of the ingredients, water, perfume, and coloring matter being omitted for conciseness.

RESULTS

The semen was mixed with the diluted jellies 1 to 5 hours (in most experiments 1 to 3 hours) after ejaculation. The average room temperature was 23 C. Each material was tested at least five times with five different donors. At least two of the tests were made by each author. The median of all tests made of each jelly or cream is given in the accompanying table.

For the four jellies all of whose times fell between the limits of 5 and 240 minutes, the standard deviation of one observation was 46 to 84% of the mean, the average being 67. The corresponding values for four creams were 23 to 38%, average being 30%.

The averages of the initial phthalate times and those measured after the final mixtures of a jelly or cream were 41± S.D. 3 minutes and 30± S.D. 2 minutes.

Of the materials reported herewith, 20 had been tested in the previous series of 1946.[6d] For 14 of these, the spermicidal times found in the two series are in substantial agreement. To La

2. Voge, C. I. B.: The Chemistry and Physics of Contraceptives, London, Cape, 1933.

3. Baker, J. R.: The Chemical Control of Conception, London, Chapman & Hall, Ltd., 1935.

4. Baker, J. R.; Ranson, R. M., and Tynen, J.: Spermicidal Powers of Chemical Contraceptives: Approved Tests, J. Hyg. **37**: 474 (July) 1937.

5. Brown, R. L., and Gamble, C. J.: (*a*) A Method of Testing the Relative Sperimicidal Effectiveness of Contraceptives, and Its Application to Ten Commercial Products, Human Fertil. **5**: 97 (Aug.) 1940; (*b*) The Comparative Spermicidal Powers of Fifteen Commercial Contraceptives, ibid. **6**: 1 (Feb.) 1941; (*c*) Studies of Spermicidal Times of Contraceptive Materials, ibid. **8**: 9 (March) 1943.

6. (*a*) Brown and Gamble.[5] (*b*) Brown, R. L.; Levenstein, I., and Becker, B.: The Spermicidal Times of Samples of Commercial Contraceptives Secured in 1942, Human Fertil. **8**: 65 (Sept.) 1943. (*c*) Becker, B., and Gamble, C. J.: The Spermicidal Times of Samples of Commercial Contraceptives Secured in 1943, Human Fertil. **9**: 6 (March) 1944. (*d*) The Spermicidal Times of Contraceptive Jellies and Creams, 1946, ibid. **11**: 111 (Dec.) 1946.

7. Hudson, C. L., and Mudd, S.: Ultramicro Technic for Precipitation and Agglutination Reactions, J. Immunol. **28**: 311 (April) 1935.

Savoy with a lower time in 1949, new ingredients have been added. For three others, Bilco Cream and Jelly, and Locorol, information regarding the formulas was incomplete. For L.A.J., with no change in formula except an increase in aminoacetic acid, the longer spermicidal time is unexplained, as is also the shorter time of Warner Creme with an identical formula.

Of the materials examined, 69% were found to inactivate the spermatozoa within the limit of 30 minutes set by the Council on Pharmacy and Chemistry as one of the criteria for acceptance for *New and Nonofficial Remedies*[8] and 56% immobilized the spermatozoa within 5 minutes or less. These proportions are approximately the same as those found in 1946.

A Change in Spermicidal Time with Age of the Contraceptive Material.—Two months after it had been manufactured the spermicidal time of one sample of a batch of jelly was found in three tests to be five minutes or less, but another tube obtained subsequently through a contraceptive clinic showed a time of 240+ minutes. In view of this discrepancy, tubes of the original lot were submitted to further tests. Three of these after 11 months at room temperature (average 23 C) had median times of 8, 26, and 27 minutes. However, the original tube as well as three others of the same lot kept at room temperature, six at 37 C and four at 45 C all for 11 months, showed spermicidal times of more than 4 hours. Similarly long spermicidal times were found for three small sample tubes received in 1949 and stored at room temperature for 11 months and for two tubes received in 1948 and kept for 24 months. Nevertheless, a tube purchased in 1946 with an age of 42 months had a time of less than 5 minutes. The formula given for the 1946 material contained 0.05% phenylmercuric acetate; those for 1948 and 1949, 0.02%.

Median Spermicidal Times by the Method of Brown and Gamble in Contraceptive Jellies and Creams Secured in 1949

Five Minutes or Less

Arc Jelly	Koromex Jelly	Ortho-Creme
Bilco Cream	Lactikol Creme	Ortho-Gynol
Certane Creme	Lactikol Jelly	Penetrox
Colagyn	Lanteen Jelly	Prentif
Contra Creme (Contra Creme and Diaphragm Co.)	Linton Cream	Ramses
	Lorophyn	Sanité
Cooper Creme	Lygel Jelly	Vagagill
Cooper Creme Gel	Marvosan Creme	Vajon
Eugenic Creme	Marvosan Jelly	Veritas Kreme
Fidelity *	Metakol	Volpar Paste
Jellak	Nixon Creme	Warner Creme
Koromex Cream	Obegyne	Zylactic *

Product	Min.	Product	Min.
Verithol	6	Femo-gene	87
Caprokol	7	Arc Creme *	91
Oxy-Zem	7	Gelacreme	97
Gelaquin	10	Servex *	219
Uni-Cream	10	Boro-Pheno-Form	240+
Uni-Jel	10	Contra (Sutliff & Case) ‡	240+
Lanteen Creme	12	Gelakta	240+
La Savoy	30	Glyeuthymenol	240+
Lorcorol	34	L. A. J.*	240+
Stillman's Jell *	36	Linton Jelly	240+
V. A. Jelly	39	Medi-Phragm *	240+
Safex	49	Murax	240+
Bilco Jelly	70	Special Formula 543	240+
Creemoz *	70		

*The manufacturer has informed us that a new formula is being prepared.

‡ The manufacturer has informed us that the production of this material has been discontinued.

The manufacturer suggested that the changes may have been because tubes tested were inadvertently filled without the internal wax coating customarily used. Since this may have been a factor and, if so, is one which the maker states is no longer present, the median time for this jelly is not included in the accompanying table.

8. New and Nonofficial Remedies 1950, Philadelphia, J. B. Lippincott Co., 1951, p. xxxi.

A review of 12 other materials in this series which contained phenylmercuric compounds showed no significant increase in spermicidal times on being kept 3 to 11 months. However, one of them, Murax, containing 0.02% of phenylmercuric acetate, showed a time of 240+ upon receipt.

In an earlier study,[5c] it was found that 18 contraceptive materials showed no significant change in spermicidal times after storage for a year at room temperature, and that the spermicidal times of only 4 out of 42 maintained 11 months at 37 C showed significant variations. In view of the change described above it was decided to review the contraceptive materials secured in 1946. Spermicidal times were accordingly determined with materials from the same tubes used 3½ years earlier for the tests reported in the previous publication.[6d] These had been kept at room temperature of about 23 C. Each was tested by each author with semen from three or more different donors. Additional tests were made of those for which the times were found to have changed. Substantially the same spermicidal times were found for Bilco Cream, Certane Creme, Clinicol, Contra Creme, Contragene, Cooper Creme, Hyva, Koromex Cream and Jelly, Lactikol Creme and Jelly, La Savoy, Lorophyn, Marvosan Creme and Jelly, Ortho-Creme, Ortho-Gynol, Planpar, P.S. Cream and P.S. 25% Glycerin Jelly. Bilco Jelly and L.A.J. had changed from 128 minutes in the 1946 test to 240+ in 1950. Lygel Jelly, for which the time was less than 5 minutes in 1946, was found to have a time of 240+. Lygel Cream had increased from 19 to 68 minutes. Locorol and Warner's Cream could not be tested because they had separated into solid and liquid portions. The samples of Lanteen Jelly and Ramses had been exhausted in the previously published tests and, since no further use was anticipated at that time, had not been replaced. A sample of Ramses which the manufacturer had kept at room temperature since its manufacture in 1946, was found in 1950 to have a spermicidal time of 5 minutes or less, the same as that found in the 1946 review.

These results show that most of the materials had retained their spermicidal activity through a 3½ year period, a much longer time than their usual shelf-life as customarily distributed to the public. Since no significant change was noted in the spermicidal times of four of the materials which contained phenylmercuric acetate, Contra Creme, Koromex Cream and Jelly, and Lorophyn, there is no indication that the changes described in the samples of one jelly were connected with this compound.

One manufacturer sent a 2 ounce tube of contraceptive jelly which he said contained radium. When measured with a Geiger-Mueller counter, it was found to contain the equivalent of 0.89 micrograms of radium. Serious results have been known to follow when as much as 5 micrograms of radium have been absorbed into the body. Although absorption from the vagina is incomplete, it seems unwise to employ such a material in a contraceptive which will be repeatedly used.

The same manufacturer offers suppositories weighing 1.75 gm. and containing 0.05 micrograms of radium, and an ointment with 0.66 micrograms of radium per ounce. The same objection also applies to these.

The results given are only an indirect indication of the protection from pregnancy which is to be expected from the materials examined. The protection is based on the immobilization of sperms after mixing with the spermicide which is correlated with clinical contraceptive effectiveness by *a priori* reasoning rather than a tested relationship. It does not take into account the consistency of the contraceptive material which is an important factor.

SUMMARY

Clinical contraception is accomplished by obstruction to the passage of the spermatozoa as in sterilization or use of the condom, by a lengthening of the route which the spermatozoa must travel as with a diaphragm or cervical cap, or by a combination of obstruction and chemical action as furnished by contraceptive jellies or creams.

Estimation of the effectiveness of contraceptive materials by clinical trials is difficult because of unreported omissions. Laboratory tests, designed to give indications of clinical effectiveness, have been based on the viscosity of the material and on the time required for immobilization of the spermatozoa after mixing with the spermicide.

Spermicidal times, determined by the procedure of Brown and Gamble (which requires dilution and mixing) are given for samples of 62 commercial contraceptive mixtures secured in 1949. These vary from less than 5 to more than 240 minutes.

ADDENDUM

1. Complete quantitative formulas were supplied by the manufacturers for the following products:

Arc Creme	%
Trioxymethylene U. S. P.	0.038
Phenol U. S. P.	0.33
Rhodinol	0.05
Beta naphthol	0.05
Sodium benzoate	0.05
Boric acid U. S. P.	0.05
Alcohol, ethyl U. S. P.	0.53
Sodium hydroxide U. S. P.	0.18
Potassium hydroxide U. S. P.	1.20
Glycerin U. S. P.	6.37
Stearic acid T. P.	24.42

Arc Jelly	
Alkyl (cetyl) dimethyl benzyl ammonium chloride	0.25
n-Butyl-p-hydroxybenzoate	0.02
Boric acid U. S. P.	0.95
Alcohol U. S. P.	5.15
Gum tragacanth U. S. P.	3.75
Glycerin U. S. P.	11.70

Caprokol Jelly	
Hexylresorcinol	0.1
Glycerin U. S. P.	5.0
Alcohol U. S. P.	5.0
Tragacanth powder	1.5
Quince seed	0.5

Colagyn	
Zinc sulfocarbolate	0.5
Lactic acid	1.0
Potassium oxyquinoline sulfate	0.16
Boric acid	0.5
Tragacanth	4.1
Glycerin	10.0

Contra Creme (Contra Creme & Diaphragm Co.)	
Phenylmercuric acetate	0.062
Triethanolamine	0.062
Glycerin	2.6
Glycol monostearate	3.6
Stearic acid	12.5

Cooper Creme	
Trioxymethylene U. S. P.	0.04
Dioctyl sodium sulfosuccinate	0.50
Hydrous aluminum silicate	2.34
Trihydroxyethylamine	7.91
Sodium oleate	0.67
Stearic acid	23.04

Cooper Creme Gel	
Trioxymethylene U. S. P.	0.04
Lactic acid	0.09
Dioctyl sodium sulfosuccinate	0.50
Sodium oleate	0.67
Trihydroxyethylamine	10.50
Cellulose gum	11.00

Creemoz	
Trioxymethylene U. S. P.	0.038
Phenol U. S. P.	0.33
Rhodinol	0.05
Beta naphthol	0.05
Sodium benzoate	0.05
Boric acid U. S. P.	0.05
Alcohol, ethyl U. S. P.	0.53
Sodium hydroxide U. S. P.	0.18
Potassium hydroxide U. S. P.	1.20
Glycerin U. S. P.	6.37
Stearic acid T. P.	24.42

Eugenic Creme	
Duponol C	0.025
Triethanolamine	1.4
Methyl-p-hydroxybenzoate	0.2
Sodium borate	0.1
Sodium stearate	6.0
Glycerin	4.0
Stearic acid	20.0
Oleic acid	0.15

Jellak	
Alkyl (cetyl) dimethyl benzyl ammonium chloride	0.25
n-Butyl-p-hydroxybenzoate	0.02
Boric acid U. S. P.	0.95
Alcohol U. S. P.	5.15
Gum tragacanth U. S. P.	3.75
Glycerin U. S. P.	11.70

Koromex Creme	
Phenylmercuric acetate	0.02
Oxyquinoline benzoate	0.02
Boric acid	2.0
Butyl-p-hydroxybenzoate	0.02
Sorbitan monoleate	5.0
Polyoxyalkalene sorbitan monostearate	3.0
Cetyl alcohol	1.0
Stearic acid	20.0
Glycerin	5.0

Koromex Jelly	%
Phenylmercuric-acetate	0.02
Oxyquinoline benzoate	0.02
Boric acid	2.0
Butyl-p-hydroxybenzoate	0.02
Glycerin	10.0
Gum acacia	0.6
Tragacanth	2.5

Lacktikol Creme	
Glyceryl monoricinoleate	1.5
Lactic acid	0.5
Stearic acid	15.0
Sodium lauryl sulfate	0.6
Glyceryl monostearate	7.5
Glycerin	8.0

Lacktikol Jelly	
Glyceryl monoricinoleate	1.0
Lactic acid	1.5
Oxyquinoline sulfate	0.05
Butyl-p-hydroxybenzoate	0.02
Sodium lauryl sulfate	0.2
Glycerin	8.0
Tragacanth	2.7
Karaya	1.0
Acacia	1.0

L. A. J.	
Lactic acid	1.5
Aminoacetic acid	0.1
Boric acid	1.0
Methyl-p-hydroxybenzoate	0.1
Propyl-p-hydroxybenzoate	0.1
Glycerin	20.0
Tragacanth	0.9
Carob gum	2.25
Starch	5.35

Lanteen Creme	
Chlorothymol	0.0066
Sodium benzoate	0.172
Glycerin	5.0
Oleic acid	7.6
Stearic acid	15.2
Potassium hydroxide	0.95

Lanteen Jelly	
Ricinoleic acid	0.50
Hexylresorcinol	0.10
Chlorothymol	0.0077
Sodium benzoate	0.20
Glycerin	16.13
Tragacanth	1.73
Starch	0.97
Calcium hydroxide	0.0264
Hydrochloric acid to adjust pH to 5.2	

Linton Cream	
Paraformaldehyde	0.1
Triethanolamine	0.9
Potassium carbonate	0.2
Paraffin	2.0
Stearic acid	22.0

Linton Jelly	
Lactic acid	1.5
Boric acid	4.0
Glycerin	7.7
Starch	8.0
Gum karaya	1.33

Lorophyn	
Phenylmercuric acetate	0.05
Polyethylene glycol of monoisooctylphenyl ether	0.3
Sodium borate U. S. P.	3.0
Methyl-p-hydroxybenzoate	0.05
Gum tragacanth	1.8
Purified Irish moss	1.2
Glycerin	8.0

Marvosan Creme	
Paraformaldehyde	0.1
Methyl-p-hydroxybenzoate	0.1
Propyl-p-hydroxybenzoate	0.1
Sodium oleate	0.5
Glycerin	6.3
Stearic acid	29.8
Propylene glycol	5.4
Triethanolamine	1.96

Marvosan Jelly	
Lactic acid	1.5
Oxyquinoline sulfate	0.2
Aminoacetic acid	0.1
Methyl-p-hydroxybenzoate	0.1
Propyl-p-hydroxybenzoate	0.1
Boric acid	1.0
Glycerin	20.0
Tragacanth	0.9
Carob gum	2.25
Starch	5.35

Medi-Phragm	
Trioxyethylene	0.1
Lactic acid	0.5
Methyl-p-hydroxybenzoate	0.2
Algin	2.7
Corn starch	2.0
Glycerin	10.0
Pectinum N. F.	0.5
Sodium hydroxide	0.26

Metakol	%
Sodium lauryl sulfate	0.2
Nonaglycol monolaurate	1.0
Glyceryl monoricinoleate	1.0
Boric acid	3.0
Glycerin	7.0
Gum tragacanth	2.0
Gum karaya	1.0
Gum arabic	0.5

Murax *	
Phenylmercuric acetate	0.02
Propylene glycol	12.0
Polyoxyalkylene sorbitan monooleate	0.3
Lactic acid pH 4.4-4.6	0.3

Obegyne	
Lactic acid	1.5
Oxyquinoline sulphate	0.05
Nonaethylene glycol monolaurate	3.0
Butyl-p-hydroxybenzoate	0.02
Glycerin	7.0
Tragacanth	2.0
Karaya	3.0
Acacia	0.5

Ortho-Creme	
Ricinoleic acid	0.75
Boric acid	2.0
Cetyl alcohol	0.5
Sodium lauryl sulfate	0.28
Triethanolamine	0.25
Glycerin	8.0
Stearic acid	24.0

Ortho-Gynol	
Ricinoleic acid	0.75
Boric acid	3.0
Oxyquinoline sulfate	0.025
Propyl-p-hydroxybenzoate	0.05
Glycerin	5.0
Acacia	2.0
Tragacanth	3.0

Oxy-Zem	
Lactic acid	0.1
Oxyquinoline sulfate	0.025
Boric acid	3.0
n-Butyl-p-hydroxybenzoate	0.05
Glycerin	5.0
Tragacanth	3.0
Acacia	2.0

Ramses	
Dodecaethylene glycol monolaurate	5.0
Boric acid as borate buffer PH 7.8	1.0
Alcohol	5.0
Butyl-p-hydroxybenzoate	0.02
Carboxymethyl cellulose	2.5
Glycerin	7.0

Sanité Jelly	
Ricinoleic acid	0.7
Lactic acid	1.0
Oxyquinoline sulfate	0.05
Boric acid	3.0
Butyl-p-hydroxybenzoate	0.05
Glycerin	10.0
Acacia powder	2.0
Tragacanth ribbon	2.75

Servex	
Sodium phenylmercuric nitrate	0.0161
Lactic acid	0.85
Sodium biborate	0.583
Boric acid	0.85
Benzoic acid	0.106
Cocoanut oil soap	1.27
Gum Visco E	6.52

Stillman's Medicated Jell	
Lactic acid	1.0
Oxyquinoline sulfate	0.1
Methyl-p-hydroxybenzoate N. F.	0.05
Boric acid	1.13
Gum tragacanth	0.6
Starch (corn)	5.63
Glycerin	54.12

Vagagill	
Phenylmercuric nitrate	0.02
Phenol	0.236
Oxyquinoline sulfate	0.087
Boric acid	1.63
Sodium borate	0.025
Locust bean gum	1.0
Tragacanth	2.25
Glycerin	32.0

V. A. Jelly	
Citric acid	1.0
Oxyquinoline citrate	0.1
Boric acid	2.0
Methyl cellulose	2.4
Propylene glycol	15.0

* Murax is advertised for cervicitis and vaginitis, not as a spermicide.

Veritas Kreme	%
Paraformaldehyde	0.1
Methyl-p-hydroxybenzoate	0.1
Propyl-p-hydroxybenzoate	0.1
Propylene glycol	5.4
Triethanolamine	1.96
Sodium oleate	0.5
Stearic acid	29.8
Glycerin	6.3

Verithol	
Lactic acid	1.5
Aminoacetic acid	0.1
Oxyquinoline sulfate	0.2
Methyl-p-hydroxybenzoate	0.1
Propyl-p-hydroxybenzoate	0.1
Boric acid	1.0
Glycerin	20.0
Tragacanth	0.9
Carob gum	2.25
Starch	5.35

Warner Creme	
Chlorthymol	0.09
Lactic acid	0.35
Oxyquinoline sulfate	0.03
Boric acid	2.71
Gelatin	0.86
Glycerin	22.96
Karaya gum	0.86
Starch	5.16

Zylactic	
Lactic acid	0.2
Oxyquinoline sulfate	0.25
Propyl-p-hydroxybenzoic acid	0.09
Boric acid	3.0
Glycerin	10.0
Algin	1.0
Methyl cellulose	1.5

2. For the following products the manufacturers gave quantitative formulas, which appear complete except for the jelly-forming material:

Bilco Cream	%
Lactic acid	1.4
Oleic acid	1.4
Citric acid	0.1
Triethanolamine	1.4
Methyl-p-hydroxybenzoate	0.075
Propyl-p-hydroxybenzoate	0.075
Glyceryl monostearate base	...

Bilco Jelly	
Lactic acid	1.0
Boric acid	4.0
Methyl-p-hydroxybenzoate	0.075
Propyl-p-hydroxybenzoate	0.075
Vegetable gum base	...

La Savoy Jelly	
Lactic acid	4.15
Chlorothymol	0.01
Oxyquinoline sulfate	0.06
Boric acid	0.26
Butyl-p-hydroxybenzoic acid	0.02
Glycerin	63.0
Tragacanth and glycerite of starch	...

Lygel Jelly	
Benzalkonium chloride	0.1
p-tert. amylhydroxy benzene	0.05
p-Chloro-m-dimethylhydroxy benzene	0.05
Lactic acid	0.25
Glycerol	15.0
Gum tragacanth and pectin	3.5

3. Partial formulas were furnished by the manufacturers for the following:

Nixon Creme †	%
Phenylmercuric borate	0.0175
Oxyquinoline sulphate	0.08
Triethanolamine	...
Propylene glycol monostearate	...
Stearic acid	...
Glycerin	...

Prentif	
Hexylresorcinol	0.1
Glycerin	11.5
Tragacanth	2.5
Tartaric and citric acids sodium tartrate sodium citrate	1.5
Methyl-p-hydroxybenzoate	0.15

Uni-Cream ‡	%
Phenylmercuric acetate	0.02%
Oxyquinoline benzoate	0.02
Boric acid (in emulsion of stearic acid, cetyl alcohol, glyceric, perfume and deionized water)	2.0

† Formula copied from tube. No reply was received to a letter asking permission to publish a more complete formula.

4. For the following products, the available information was limited to the "active ingredients":

Boro-Pheno-Form ‡
Zinc phenolsulphonate
Hexamethylenamine
Zinc sulphate
Salicylic acid
Boric acid
Quinine sulphate
Cinchona bark red

Certane Cream §
Sodium sulfo dioctyl succinate
Chlorthymol
(in a specially prepared stearate base)

Contra (Sutliff & Case)
Lactic acid and boric acid
(in a glycerinated base)

Fidelity §
Ricinoleic acid
Lactic acid
Resorcinol
Boric acid
(in a special water soluble cohesive base)

Gelacreme ‡
Lactic acid and boric acid
(in a buffered stearic acid emulsion base)

Gelakta ‡
Lactic acid
Boric acid

Gelaquin ‡
Lactic acid
Oxyquinoline benzoate
Boric acid

Glycuthymenol ‡
Lactic acid
Zinc sulfate
Sodium benzoate
(in a glycerinated base aromatized with eucalyptol, thymol, menthol, methyl salicylate)

Locorol ‡
Potassium oxyquinoline sulphate
Boric, acetic, and tartaric acids
Glycerin
(in a vegetable gum base)

Penetrox ‡
Phenylmercuric borate
Lactic acid
Oxyquinoline sulphate
Boric acid
(glycerin, karaya gum, rose oil perfume, baume syrup)

Safex ‡
Lactic acid
Oxyquinoline benzoate
Resorcinol
Boric acid
Glycerin
Tragacanth

Special Formula 543 ‡
Lactic acid
Boric acid
Glycerin
Tragacanth

Uni-Jel ‡
Trioxymethylene 0.04%
Sodium oleate 0.67%

Volpar Paste
Phenylmercuric acetate 0.03%

‡ Formula copied from tube. No reply was received to a letter asking permission to publish a more complete formula.
§ Formula copied from tube. Permission to publish a more complete formula was refused.

5. No information regarding ingredients was available for Femogene or Vajon.

COMMITTEE ON COSMETICS

The following products have been accepted as conforming to the Rules of the Committee on Cosmetics. A copy of the rules on which the Committee bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

John H. Breck, Incorporated

BRECK BABY LAVO—A heavy-bodied, light amber-colored liquid consisting of a perfumed water solution of a non-caustic organic base soap, intended as a skin cleanser and shampoo for babies. (Bottle: 4 oz., pint, quart, and gallon.)

Consolidated Royal Chemical Corporation

KRANK'S BRUSH LATHER SHAVE—A lightly perfumed white cream consisting of fatty acids, sodium and potassium hydroxide, a surface active agent, glycerin, boric acid, and stabilizers, intended to soften the beard and facilitate shaving. (Tubes: 2 and 4½ oz. Jars: 8 and 16 oz.)

KRANK'S BRUSHLESS SHAVE KREEM—A lightly perfumed white cream consisting of stearic acid, petrolatum, lanolin, a surface-active agent, glycerin, and potassium hydroxide, intended to soften the beard and facilitate shaving. (Tubes: 1½ and 4½ oz. Jars: 8 and 16 oz.)

Cosmetic Laboratories, Incorporated

BEAUTY COUNSELOR'S COMPACT POWDER—A very fine compressed powder mixture of talc, chalk, and kaolin pigmented with oxides, intended to give a smooth appearance to the skin and enhance its color. (Plastic case: ½ oz.)

BEAUTY COUNSELOR'S DRY ROUGE—A compressed cake of fine mineral ingredients with certified organic and inorganic pigments. Intended to enhance the natural color of the cheeks. (Plastic case: ½ gm.)

BEAUTY COUNSELOR'S LIPSTICK—A solid waxy mass consisting of certified colors, waxes, and vegetable and mineral oils. Intended to stain, cover, and color the lips. (Tube: 4.1 gm., 3.3 gm., and 3.0 gm.)

BEAUTY COUNSELOR'S MASCARA—A solid waxy cake containing essentially waxes, alkanol amine soaps, pigments, and a tack producing agent. Readily applicable with water and brush. Intended to enhance the color of lashes and brows. (Plastic case: 3 gm.)

The Dermo Company

CASIL PROTECTIVE SKIN CREME—A suspension of colloidal silicate and casein in soap, intended to serve as an industrial protective skin cream by coating the skin with an invisible film which is resistant to oils, dirt, grease, paint, pigments, and other industrial irritants. (Can: 5 lb.)

Luzier's Incorporated

LUZIER'S NAIL ENAMEL—A clear or opaque pigmented lacquer containing a sulfonamide resin, nitrocellulose in acetate, a plasticizer, and alcohol solvent, intended to enhance the color of the nails. (Bottle: ½ oz.)

LUZIER'S SUNTAN LOTION—A light reddish-tan liquid emulsion consisting of a vegetable oil, cetyl alcohol, distilled water, ammonium lauryl sulphate, perfume, coloring, and digalloyl trioleate compound as a screening agent. The lotion is intended to protect the skin from the erythemogenic rays of the sun and to permit tanning. (Bottle: 4 fl. oz.)

Marrow's, Incorporated

MAR-O-OIL REGULAR SHAMPOO—A perfumed colored liquid nonfoaming shampoo, containing a sulfated vegetable oil, a fatty acid, mineral oil, and a preservative, intended to cleanse the hair and scalp. (Bottle: 6, 14, and 32 oz.)

MAR-O-OIL SUPER FOAMY SHAMPOO—A perfumed colored liquid foaming shampoo, containing organic and inorganic salts of sulfated fatty acids, intended to cleanse the hair and scalp. (Bottle: 6, 14, and 32 oz.)

Materna Products, Incorporated

MATERNA CREAM—A firm white cream containing cocoa butter, lanolin, and boric acid in an emollient base, intended to soften and lubricate the skin. (Jar: 3 oz.)

Maternity Cosmetics

MARION PHILLIPS SOAP—A blue-green tallow and cocoanut oil perfumed soap, superfatted with lanolin, intended to cleanse the skin when a bland soap is desired. (Cake: 83 gm.)

McKesson and Robbins, Incorporated

TAWN SHAVING BOWL—A white shaving soap consisting of a cocoanut oil, tallow, stearic acid, glycerin, lanolin, and alcohol, pigment and perfume, intended to soften the beard and to facilitate shaving. (Case: 3⅛ oz.)

Northam Warren Corporation

CUTEX NAIL POLISH—A clear or opaque and colored, viscous lacquer containing a sulfonamide resin, nitrocellulose and plasticizers in alcohol and acetate solvents intended to enhance the color of the nails. (Bottle: ¼ fl. oz. and ⅔ fl. oz.)

CUTEX LIPSTICK—A smooth mixture of oils, waxes, and emollient substances together with colors and pigments intended to enhance the color of the lips. (Tube: 3.0 or 3.5 gm.)

CUTEX PEARL BRILLIANCE—An opaque, colored, viscous lacquer containing natural pearl essence, a sulfonamide resin, nitrocellulose, and plasticizers in alcohol and acetate solvents intended to enhance the color of the nails. (Bottle: ¼ fl. oz. and ⅔ fl. oz.)

CUTEX OILY CUTICLE REMOVER—A slightly perfumed dilute potassium hydroxide solution containing soluble oil and propylene glycol intended to soften the cuticle and permit its removal by gentle rubbing. (Bottle: 0.5 fl. oz.)

CUTEX LOTION POLISH REMOVER—A mixture of solvents containing natural oil and lanolin intended to remove nail polish from the nails. (Bottle: 2.90 fl. oz.)

Revlon Products Corporation

REVLON LIPSTICK—A hypoallergenic, firm, waxy mixture, containing lanolin, various waxes, oils, colors, and perfume, intended to enhance the color of the lips. (Tube: 4½ gm.)

REVLON AQUAMARINE LOTION—A hypoallergenic aquamarine-colored and scented emulsion containing lanolin derivatives and oils, for relieving dryness of the skin. (Bottle: 5 and 16 oz.)

REVLON FACE POWDER—A hypoallergenic, finely pulverized scented powder, consisting essentially of talc, zinc stearate, and pigments, intended to reduce the shine of the skin on the face. (Box: 2 and 3 oz.)

Richard Hudnut Company

RICHARD HUDNUT HOME PERMANENT

Creme Waving Lotion—A pink opaque perfumed solution of ammonium thioglycollate, containing a surface-active agent and an opacifier. (Bottle: 4 fl. oz.)

Neutralizer—A pink powder composed chiefly of potassium bromate. Intended to be used at specified intervals to arrest the chemical action of the waving solution. (Package: 0.5 av. oz.)

The Toni Company

PERMAFIX—A white powder, composed of sodium perborate and sodium hexametaphosphate, which forms a translucent solution when dissolved in water. Intended to be used at specified time intervals to arrest the chemical action of the waving solution. (Package: 5.2 and 5.8 gm.)

Texas Pharmacal Company

ALLERCREME BODY LOTION—A hypoallergenic, thick white liquid, perfumed or unperfumed emulsion of the oil-in-water type containing lanolin derivatives, petrolatum, a stearate, an alcohol, a surface-active agent and water, intended as a skin emollient. (Bottle: 8 fl. oz.)

Vanpelt and Brown, Incorporated

VB LOTION—A pink-colored, perfumed liquid emulsion consisting of quince seed, stearic acid, a surface-active agent, an alcohol, wool fat, a demulcent, coloring agents, and a preservative, intended to soften and to protect the skin. (Bottles: 3 fl. oz. and 1 gal.)

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ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Elsewhere in this issue appears the program for the Forty-Eighth Annual Congress on Medical Education and Licensure, to be held at the Palmer House, Chicago, Feb. 10-12, under the sponsorship of the Council on Medical Education and Hospitals.

This year's program provides an unusual variety of papers and discussions on subjects of general and current importance in medical education. Of particularly wide interest will be the presentation by the director of the newly organized National Science Foundation of the foundation's program and plans. With the growing interest in the preceptorship as a part of the medical school curriculum, the panel on the place of the preceptorship in undergraduate medical education should provoke discussion of the value of this educational method.

The distribution of physicians will be analyzed in a report of a study of graduates of all American medical schools over a span of 25 years.

With regional plans for medical education receiving increasing attention in many parts of the country, the report of the experiences of the Southern Regional Program initiated four years ago will be helpful to many.

Graduate medical education will be considered by two panels, one discussing the standards for the approval of residency training programs, the other the problem of the internship and residency as related to medical licensure. The subject of medical education in other countries will be represented this year by a paper outlining plans for an international conference on medical education and by a report on American students in foreign medical schools.

The congress is an open meeting, at which physicians and others interested in medical education are welcome. Reservations should be made with the hotel at the earliest possible date.

INFECTION DUE TO CHROMOBACTERIA

Chromobacteria are non-spore-forming, aerobic bacilli, motile and usually gram-negative. They were considered saprophytic organisms of a rather ubiquitous distribution. They grow readily on ordinary mediums and produce pigment that develops only in the presence of oxygen and is most abundant on the primary culture. According to Topley and Wilson,[1] the chief member of the group producing a violet pigment is Chromobacterium violaceum, that of the group producing pink and red pigment is Chromobacterium prodigiosum (Serratia marcescens), and that of the group producing yellow or orange pigment is Chromobacterium aquatilis. Chromobacterium prodigiosum was first demonstrated by Bartolomeo Bizio in 1823 as a cause of "bleeding polenta." He considered the causative organism a fungus and gave it the name Serratia marcescens.

Woodward and Clark,[2] in 1913, reported the first human infection in a patient with chronic, nonfatal pulmonary disease. The sputum of the patient was not bloody but contained organisms which on culture proved to be red-pigmented gram-negative bacilli. Rosahn and Hu [3] demonstrated the pathogenicity of several strains of chromobacteria in various animals. Black and Shahan [4] reported diffuse skin lesions and enlarged inguinal lymph nodes in a boy 6 years old. Smears from the lesions showed a slender, gram-negative bacillus which on agar cultures produced deep violet colonies. The pigment was slightly soluble in water and quite soluble in alcohol. Aronson and Alderman [5] recovered from the spinal fluid of a patient with cerebral spinal meningitis an organism that presented the cultural and biochemical characteristics of Serratia marcescens. The culture was pathogenic for mice, rats, rabbits, hamsters, and turtles and produced a labile hemolysin. Cultures of this organism showed variations in colonial characteristics and in the production of pigment. Schattenberg and Harris [6] described in 1941 a fulminant, fatal infection caused by Chromobacterium violaceum in man. This patient had septicemia. The micro-organisms were recovered post mortem from various visceral lesions.

Wheat and associates [7] report, in a recent communication, 11 cases of infection by chromobacteria observed during a period of six months. The infection in these patients was recognized and the organism first recovered after some type of urinary tract manipulation, such as catheterization, cystoscopy, and genitourinary surgical treatment. In all cases the organism was present in the urine in large numbers, and in two cases it was recovered from the blood. Fatal endocarditis developed in one of the patients. The organism in these cases was probably introduced by the instrumentation of the urinary tract. The antibiotics had no effect on the chromobacteria either in vitro or in vivo. The authors felt that the use of multiple antibiotics, which eliminated all the usual organisms responsible for infection of genitourinary organs, permitted the ready implantation of the highly antibiotic-resistant and sulfonamide-resistant Chromobacterium. It seems likely that the usually saprophytic bacterium may become pathogenic as the result, at least in part, of the increased use of antimicrobial agents.

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4. Black, M. E., and Shahan, J.: Bacillus Violaceus Infection in a Human Being, J. A. M. A. **110**: 1270 (April 16) 1938.
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EMERGENCY WOODEN RESPIRATORS

On Nov. 30 *Popular Mechanics* magazine, in cooperation with the U. S. Junior Chamber of Commerce, launched a campaign to place in every community in the country an inexpensive wooden respirator for the emergency treatment of patients with poliomyelitis. These respirators are to be constructed by local craftsmen or manual training classes, from material available in ordinary lumber yards, hardware stores, and garages or machine shops, and from plans made available by *Popular Mechanics*. The respirators are patterned after the one described in the Feb. 17, 1951, issue of THE JOURNAL [1] and in a descriptive pamphlet, obtainable from the Council on Physical Medicine and Rehabilitation of the American Medical Association. Because of its low cost, the emergency unit is expected to be within the reach of communities that cannot afford a conventional "iron lung." It is not, however, intended as a substitute for the conventional respirator, since it lacks the efficiency and durability of the latter. It is to be used only as a temporary emergency aid until a standard respirator can be obtained. Since the National Foundation for Infantile Paralysis can fly a standard respirator to any part of the country within a matter of hours, there should be no need for prolonged use of the emergency units. The sponsors of the plan feel, however, that in an emergency the instant availability of a respirator may be life-saving.

This is a humanitarian enterprise for which *Popular Mechanics* and the Junior Chamber of Commerce are to be commended. Great caution must be urged, however, in the execution of such a plan. Wooden respirators of this type that are properly constructed and properly supervised in use are effective and safe for short-term operation. Poorly constructed and operated by inexperienced personnel, they may be completely ineffective and their use might conceivably delay the institution of adequate therapy to the point of danger or even fatality. The following precautions are essential to the safe use of these respirators: 1. They must be built by an exceptionally good mechanic. Units built by semi-skilled local carpenters and tinsmiths may not be adequate in an emergency. 2. Their use should be supervised by personnel familiar with both the mechanical and the medical aspects of respirator operation and capable of coping instantaneously with mechanical breakdown. 3. They should be tested by qualified persons before being put into emergency operation and at three to four week intervals as long as the apparatus remains idle. Airtightness, degree of vacuum obtainable, rate of alternation of pressures, and mechanical readiness should be checked regularly as well as the integrity of the rubber gaskets during storage. The machine should be capable of developing negative pressures of 10 to 20 cm. of water and should complete 12 to 20 cycles of alternate negative and positive pressures per minute. 4. The homemade respirator should not be expected to stand long periods of continuous operation or to serve as a true substitute for a commercial unit. These precautions should be observed by all who participate in the program.

HAZARDS OF MULTIVITAMIN THERAPY IN UNDIAGNOSED PERNICIOUS ANEMIA

The danger of masking pernicious anemia through the use of folic acid-containing proprietary vitamin preparations is emphasized in a recent report by Conley and Krevans.[1] These authors state that, at the Johns Hopkins Hospital, the diagnosis of pernicious anemia was established in 58 patients during the five year period prior to 1950. In eight of these patients the blood values were essentially normal at the time the diagnosis was made. In only one patient, however, was the absence of anemia not explained. In the other seven patients, anemia was known to have been present prior to admission and there was a definite history of treatment with folic acid, liver extracts, or blood transfusions.

In the same hospital during the year 1950, of 10 patients with previously unrecognized pernicious anemia, 5 had essentially normal blood values on admission, and the patients complained only of neurological symptoms. In two patients history of soreness of the tongue was elicited, and, in all five, achlorhydria following histamine injection was demonstrated. Therapy with parenterally administered vitamin B_{12} improved the neurological manifestations in all five patients. Further inquiry revealed that these patients had been taking multivitamin preparations before admission. It was possible to identify the particular preparation used by four of the patients, and, in each case, the folic acid content was found adequate to produce a hematological remission in patients with pernicious anemia. A survey showed that, despite the relatively limited occurrence of folic acid deficiency states, more than 80 of the widely available proprietary vitamin preparations contained folic acid and in most of these the recommended dose provided for at least 5 mg. of folic acid daily, a dose sufficient to maintain a prolonged hematological remission in patients with pernicious anemia. In such patients, however, progressive and severe subacute combined degeneration may develop while the blood picture remains normal. Incorporation of small amounts of vitamin B_{12} in multivitamin preparations will not prevent these neurological manifestations, since this vitamin is poorly absorbed by the gastrointestinal tract in patients with pernicious anemia.

Conley and Krevans stress the hazard of administering folic acid-containing vitamin preparations to patients whose symptoms might be attributable to pernicious anemia. Furthermore, in view of the widespread and often promiscuous use of such preparations, these investigators recommend that patients with neurological manifestations of subacute combined degeneration should be regarded as having pernicious anemia, even though the blood findings are normal, and should receive intensive therapy with parenterally administered B_{12} or purified liver extract.

1. Cline, G. M.; Dolley, H. O., and Osborn, R. C.: Emergency Wooden Respirator, J.A.M.A. **145**:485 (Feb. 17) 1951.

1. Conley, C. L., and Krevans, J. R.: Development of Neurologic Manifestations of Pernicious Anemia During Multivitamin Therapy, New England J. Med. **245**: 529 (Oct. 4) 1951.

THE PRESIDENT'S PAGE

A MONTHLY MESSAGE

Industrial workers are the backbone of America's labor force. Without their tremendous productive capacity our country could not have won World War II. As we rebuild our military strength in an effort to keep the "Cold War" cold, it is again their skillful hands which are turning out the weapons for defense. Unfortunately, many of our leaders say that our most crucial defense shortage is in skilled workers. Expanding industries are in need of an increasing number of trained men and women, but they are not always available to fill the need. It is therefore even more important now than in "normal" times for our profession to concern itself with improving industrial health through prevention of sickness, prompt treatment of disease, and speedy rehabilitation of those who are injured.

The American Medical Association has had a Council on Industrial Health since 1937. I would like to tell you something of what this Council is trying to do to keep American workers healthy and on the job and how you, as an individual physician, can help in this effort. The Council's activities are aimed in two directions. Some are intended to assist the profession to develop and maintain high standards of medical care in industry. Others are intended to interest labor and management in good health programs for the worker.

The Council foresees an increasing emphasis on the preventive aspects of medicine and believes that a goodly proportion of this activity will be carried out by industrial physicians, who are in an excellent position to spot disease early through their examination programs for workers. The Council also foresees an increasing demand for industrial health programs by both management and labor. It therefore feels that the medical profession must be prepared to meet the need for more industrial physicians. To that end, the Council has worked with the A. M. A.'s Council on Medical Education and Hospitals to encourage U. S. medical schools to place more emphasis on industrial medicine at the undergraduate level and to offer refresher courses for practicing physicians. It has attempted particularly to encourage general practitioners to avail themselves of such industrial medicine courses, because many of them handle industrial cases for plants where a full-time physician is not employed by the company.

In an effort to provide authentic information for industrial physicians who are already in practice and thus assist them in maintaining a high level of professional care, the Council conducts studies in the field and publishes reports in THE JOURNAL or in pamphlet form. It has information on such topics as noise in industry, environmental hygiene, health problems of women in industry, workmen's compensation, and rehabilitation of the industrial worker. It also publishes reports on the relationship between the industrial physician and the employer, the physician and the worker, the physician and the community, and the industrial physician and his fellow practitioners.

Soon the Council will undertake a new study made necessary by rearmament. It will survey all heavy defense areas in the country to determine whether there are enough doctors to care adequately for the increased population attracted to the community by the defense work. If it finds industrial areas that are short of physicians, it will inform the A. M. A.'s National Placement Service and state medical association placement bureaus, whose function it is to encourage physicians to settle in areas that are somewhat short of doctors.

One of the biggest tasks of the Council has been its effort to convince management and labor of the importance of preventive medicine programs in industry in addition to activities directed toward cure of disease. It has strongly supported the establishment of safe working conditions for employees, safety education among workmen, general health education for employees through such means as plant publications, films, and posters, and establishment of programs of physical examinations, both at the beginning of employment and at periodic intervals thereafter. In supporting these preventive programs, the Council works closely with many other agencies, including the National Safety Council and the U. S. Department of Labor.

Every year this important A. M. A. Council sponsors a National Congress on Industrial Health. The 1952 meeting is scheduled for Jan. 18 and 19 in the great industrial center of Pittsburgh. This meeting will draw a large attendance from management, labor, governmental agencies, and the medical profession. It is open to all physicians interested in industrial health. In past years this conference, which is held in industrial cities in different areas of the country, has served as a potent educational medium for advancing sound health programs for workers.

An unusual feature of this year's conference will be a program devoted entirely to the topic "Occupation Housewife." Speakers will discuss the problems of the homemaker who also carries an outside job, the responsibility of the homemaker for the health of her worker-husband, problems of the physically-handicapped housewife, safety in the home, and similar topics.

This is but a brief review of the Council's program for improving industrial health. How can the individual physician help? He can take a personal interest in this field. He can write for the information available from the Council on Industrial Health and study other literature in the field, so that he will be more cognizant of the health problems of the industrial worker. Then he can consult with leaders of industries and of unions in his community and interest them in sound preventive medicine programs. Through increasing his professional knowledge of industrial medicine and then spearheading improved health programs in local industries he can be a real leader in bettering the health standards of the American worker. Through such cooperative effort, too, staunch friendships will be formed with both management and labor.

Industrial health is a field with a future. It deserves our attention and our effort.

JOHN W. CLINE, M.D., San Francisco.

ORGANIZATION SECTION

FORTY-EIGHTH ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Palmer House, Chicago, Feb. 10-12, 1952

TENTATIVE PROGRAM

Advisory Board for Medical Specialties

SUNDAY MORNING, FEB. 10, 9:30 A. M.-12:30 P. M.

CRYSTAL ROOM

Round Table Discussion: Standards for the Approval of Residency Training Programs

a. Methods of Approval
b. The Standpoint of the Teaching Hospital
c. The Standpoint of the Medical School
d. The Standpoint of the Specialty Boards

Participants to be announced

Council on Medical Education and Hospitals American Medical Association

MONDAY, FEB. 11, 10:00 A. M.

RED LACQUER ROOM

H. G. WEISKOTTEN, M.D., *Presiding*

Medical Education and the World Medical Association
LOUIS H. BAUER, M.D., Secretary General, The World Medical Association.

American Students in Foreign Medical Schools
FRANCIS R. MANLOVE, M.D., Associate Secretary, Council on Medical Education and Hospitals, American Medical Association.

The Program of the National Science Foundation in Relation to Research and Education in the Sciences
ALAN T. WATERMAN, PH.D., Director, National Science Foundation.

Panel Discussion: the Place of the Preceptorship in Undergraduate Medical Education
FRANKLIN D. MURPHY, M.D., Chancellor, University of Kansas, *Moderator*

Participants to be announced

MONDAY, FEB. 11, 2:15 P. M.

HARVEY B. STONE, M.D., *Presiding*

Chairman's Address: A Study of Factors Relating to the Distribution of Physicians
H. G. WEISKOTTEN, M.D., Chairman, Council on Medical Education and Hospitals, American Medical Association

Toward a Regional Program in Medical Education
WILLIAM J. MCGLOTHLIN, Consultant for Professional Programs, Board of Control for Southern Regional Education

Western Regional Cooperation in Higher Education
WARD DARLEY, M.D., Vice President of the University and Dean of the Department of Medicine, University of Colorado

Some Basic Principles in Postgraduate Education
GEORGE AAGAARD, M.D., Dean, Southwestern Medical School of the University of Texas

National Fund for Medical Education
CHASE MELLEN JR., Executive Director, National Fund for Medical Education

American Medical Education Foundation
DONALD G. ANDERSON, M.D., Secretary-Treasurer, American Medical Education Foundation

MONDAY, 5:00 P. M.

ROOM 14

RECEPTION FOR REGISTRANTS OF THE CONGRESS BY THE AMERICAN MEDICAL ASSOCIATION

The Federation of State Medical Boards of the United States

MONDAY, FEB. 11, 7:00 P. M.

CRYSTAL ROOM

FEDERATION DINNER

CHARLES L. SHAFER, M.D., President, *Toastmaster*

A Story of Thirty-Seven Years of Service as a State Board Secretary
ADAM P. LEIGHTON, M.D., Secretary, Maine State Board of Registration of Medicine

Address
JOHN W. CLINE, M.D., President, American Medical Association.

TUESDAY, FEB. 12, 9:00 A. M.

RED LACQUER ROOM

CHARLES L. SHAFER, M.D., *Presiding*

The Role of a State Board Today
CHARLES L. SHAFER, M.D., Chairman, Pennsylvania Board of Medical Education and Licensure.

Narcotic Control by Physicians
HARRY L. ANSLINGER, Commissioner, and ALFRED L. TENNYSON, Chief Counsel, Department of Narcotics, United States Treasury.

Panel Discussion: Problems of the Internship and Residency as Related to Medical Licensure
WALTER E. VEST, M.D., Chairman, West Virginia State Licensing Board, *Moderator.*
VICTOR JOHNSON, M.D., Director, Mayo Foundation for Medical Education and Research.
CHARLES L. BROWN, M.D., Dean, Hahnemann Medical College and Hospital of Philadelphia
A. C. BACHMEYER, M.D., University of Chicago
BRUCE UNDERWOOD, M.D., Secretary, Kentucky State Board of Health
ELMER W. SCHNOOR, M.D., President, Michigan Board of Registration in Medicine

TUESDAY, 12:30 P. M.

CRYSTAL ROOM

FEDERATION LUNCHEON

CHARLES L. SHAFER, M.D., *Presiding*

The Modern Medical School: Its Obligations
FRANKLIN D. MURPHY, M.D., Chancellor, University of Kansas

REPORT OF COMMITTEE ON RESOLUTIONS

REPORT OF COMMITTEE ON NOMINATIONS

UNFINISHED BUSINESS

INTRODUCTION OF PRESIDENT-ELECT, WALTER E. VEST, M.D.

ADJOURNMENT

MEDICAL NEWS

CALIFORNIA

Society News.—The Los Angeles County Medical Association at its annual meeting December 6 elected Dr. Wilbur Bailey president, Dr. Eric A. Royston vice-president, and Dr. Paul D. Foster secretary-treasurer.

Forum in Obstetrics and Gynecology.—The Los Angeles Obstetrical and Gynecological Society is sponsoring a forum February 8-9 for all interested, licensed physicians. A program by prominent authorities in the field of obstetrics and gynecology, including Drs. Jacob P. Greenhill of Chicago, Robert A. Kimbrough of Philadelphia, Thomas N. A. Jeffcoate of Liverpool, and Hans Selye of Montreal, is planned.

ILLINOIS

Conference on Physicians and Schools.—On November 15-16 the First Illinois Conference of Physicians and Schools was held on the University of Illinois campus in Urbana. There were 102 physicians, dentists, nurses, and educators present. This conference was arranged by the educational committee of the Illinois State Medical Society in cooperation with the Illinois State Dental Society, the Illinois Department of Public Health, and the Illinois Department of Public Instruction. A request was made by those in attendance for a subsequent conference. Resolutions were adopted aiming to improve the environment of the schools physically, socially, and emotionally, as well as promote the health of school children.

Chicago

Society News.—The Institute of Medicine of Chicago announces the following officers for 1952: Dr. Henry T. Ricketts, chairman of the board of governors; Dr. Vincent J. O'Conor, president; James R. Blayney, D.D.S., vice-president; Dr. George H. Coleman, secretary, and Dr. E. Lee Strohl, treasurer.

Dr. Maddock Succeeds Dr. McNealy.—Dr. Walter G. Maddock has been appointed chairman of the department of surgery at Wesley Memorial Hospital, succeeding Dr. Raymond W. McNealy, who becomes chairman emeritus. Dr. McNealy has headed the surgical staff since 1929 and is retiring because of the hospital 65 year age limit. Dr. Maddock has been senior attending surgeon.

Dr. Hellebrandt to Head Department.—Dr. Frances A. Hellebrandt of the Medical College of Virginia, Richmond, has assumed duties as professor and head of the department of physical medicine and rehabilitation at the University of Illinois College of Medicine and chief of the service at the University of Illinois Research and Educational Hospitals. She has succeeded Dr. H. Worley Kendell, who has resigned as head of the department to accept a position as medical director of the Institute of Physical Medicine and Rehabilitation at Peoria. Dr. Kendell will retain an appointment at the University of Illinois as clinical professor of physical medicine and rehabilitation. Dr. Hellebrandt formerly held the rank of professor of physical medicine and director and chief of the Division of Medical Research of the Baruch Center of Physical Medicine and Rehabilitation at the Medical College of Virginia, where she had been since 1944.

INDIANA

Psychosomatic Forums.—Forums on psychosomatic problems are being held on the campus of Indiana University Medical Center in Indianapolis the first Monday of each month. The January 7 meeting will be on "Age, Sex and Psychodynamics in the Eye Injuries of Children (A Statistical Study)" by Drs. Theodore F. Schlaegel, Indianapolis, and Philip F. D. Seitz, Philadelphia. Ralph Reitan, Ph.D., will discuss "Use of Statistics in Medical Research." The February 4 meeting will be on "Iatrogenesis in Psychosomatic Disorders" presented by Dr. Louis W. Nie, Indianapolis.

IOWA

Senior Students to Serve Preceptorships.—Seniors in the State University of Iowa College of Medicine will serve one-month preceptorships with private Iowa general practitioners in the future as part of their undergraduate medical training. The plan is designed to provide medical students the opportunity (1) to observe closely and under ideal conditions the activities of a private physician in conduct of his practice; (2) to study carefully the modern methods of medical care as employed in the home and in the office by a private general practitioner, and (3) to observe the close personal relationship of the private physician to his patient. The plan, which will probably become effective in June, 1952, extends the senior curriculum in the college of medicine by one month, although it will not affect the student's graduation date. There will be no increase in tuition fees as a result of the plan.

Iowa's general practitioners will be asked to volunteer their services as preceptors without compensation. Final selections will be made by the dean of the college or the executive committee currently carrying out the dean's duties, with the aid of the college faculty, the Iowa Academy for General Practice, and the Iowa State Medical Society. It is hoped that preceptors will provide room and board for students assigned to them. In return medical students will aid the preceptors in the conduct of their practice to the extent permitted by the Iowa Code, receiving no payment for their services.

MASSACHUSETTS

House Officers Evening Lectures.—The House Officers Association of the Boston City Hospital announces the following programs in its evening lecture series in January:

January 8, Massive Gastrointestinal Hemorrhage, Dr. Claude E. Welch, Massachusetts General Hospital, Boston.
January 10, Clinical and Epidemiological Aspects of Coxsackie Virus Infections, Dr. Pierre Lepine, Pasteur Institute, Paris, France.
January 15, Arterial Hypertension: An Evaluation of Some Factors Which Influence Its Natural History, Eugene B. Ferris, University of Cincinnati College of Medicine.
January 22, Epidemiology of Infectious Hepatitis, Richard B. Capps, Northwestern University Medical School, Chicago.
January 29, Heart Failure, Eugene A. Stead, The Duke University School of Medicine, Durham, N. C.
January 31, Dicumarol, Its Action on Blood Clotting and Its Clinical Aspects, Paul A. Owren, University of Oslo (Norway) Medical School.

These programs will be held at 7 p. m. in the New Cheever Amphitheatre of the Dowling Building of Boston City Hospital.

MISSOURI

County Society Public Lecture.—Dr. Herbert Rattner, professor and chairman of the department of dermatology of Northwestern University Medical School, Chicago, gave the first of the 1951-1952 Public Health Lecture Series sponsored by the Woman's Auxiliary to the Buchanan County Medical Society November 29 in St. Joseph. He spoke on "Skin, a Mirror of Your Health."

Institute of Experimental Medicine.—The St. Louis University School of Medicine recently received a gift of $200,000 as an endowment to the department of internal medicine for emphasizing research in emphysema. James B. Miller, former president of Mines Equipment Company and recipient of the 1949 Fleur de Lis Award of the university, has added the sum to his half million dollar contribution made at the time of his retirement from business. The endowment has made possible the establishment of new and expanded facilities, including laboratories for pulmonary function testing and heart and blood vessel catheterization. The endowment is known as the James B. Miller and Ethel D. Miller Institute of Experimental Medicine.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

NEBRASKA

Society News.—At the annual dinner and business meeting of the Omaha Mid-West Clinical Society November 27, Dr. J. Harry Murphy, Omaha, was installed as president. Newly elected officers include Dr. Herbert H. Davis, Omaha, president-elect, and Dr. Payson S. Adams, Omaha, director of clinics. Dr. Louis E. Moon of Omaha continues as secretary-treasurer. The next annual assembly will be held in Omaha October 27-31.

NEW JERSEY

Conference on Protein Metabolism.—The eighth annual conference on protein metabolism, sponsored by the bureau of biological research of Rutgers University, will be held in New Brunswick the afternoon and evening of February 1 and the morning of February 2. The tentative program is as follows:

James H. Leathem, Ph.D., New Brunswick, Relationships Between Thyroid and Protein Metabolism.
Jane A. Russell, Ph.D., Atlanta, Actions of Growth Hormone on Metabolism of Nitrogen.
Leo T. Samuels, Ph.D., Salt Lake City, Effect of Variation in Total Protein and Amino Acids of Diet on the Endocrine System.
Charles D. Kochakian, Ph.D., Oklahoma City, Relationships Between Anabolic Steroids and Protein Metabolism.
Frank L. Engel, Durham, N. C., Relationships Between the Adrenal Cortex and Protein Metabolism.
Laurance W. Kinsell, Oakland, Calif., Relationships Between Hormones and Protein Metabolism in Man.

A registration fee of $2 will be charged for the conference. Reservations should be made by January 17 with Prof. William H. Cole, Rutgers University, New Brunswick.

NEW YORK

Change of Date of Postgraduate Lecture.—Dr. Thomas H. McGavack, professor of clinical medicine, New York Medical College, will speak at a meeting of the Rensselaer County Medical Society at 8:30 p. m. February 12 at Leonard Hospital in Troy on "Common Errors in Management of Diabetic Coma." The lecture was originally scheduled for December 11.

Personal.—Dr. Edwin G. Ramsdell, chief-of-staff and director of surgery at White Plains Hospital, received Columbia University's Lion Award December 6 for "outstanding service to his country, community, and to his university." Dr. Ramsdell has served since 1934 as president of the Westchester County Board of Health, as medical advisor to the Westchester Chapter of the American Red Cross, president of the Westchester County Medical Society, and treasurer of the American Goiter Association.

New York City

Academy Receives Paul Ehrlich Mementos.—The Paul Ehrlich Mementos were presented to the New York Academy of Medicine December 5. The mementos are a gift of the Schwerin family. At the ceremony addresses were presented by Dr. William Barclay Parsons, president of the New York Academy of Medicine, Dr. Perrin H. Long, and Selman A. Waksman, Ph.D., New Brunswick, N. J. Paul Ehrlich is best known for his discovery of arsphenamine (salvarsan®) and as the father of chemotherapy. Between 1877 and 1914 he published 232 scientific papers and books. In addition, more than 400 papers were published by his assistants and collaborators. The mementos are to be placed in the rare book room of the academy and will be available for use under academy regulations.

NORTH CAROLINA

Travel Club Organized.—The Nick Carter Travel Club, a group of former Duke Hospital residents, house staff members, instructors, and fellows in obstetrics and gynecology, held its first meeting December 8 in Burlington. Each of the 55 members present has had at least one year of training since 1931 under Dr. Bayard "Nick" Carter, chairman of the obstetrics and gynecology department at The Duke University, Durham. Dr. Walter L. Thomas, obstetrician at Duke and president of the group, said the organization aim is to promote scientific knowledge by assembly and the interchange of ideas and practice related particularly to obstetrics and gynecology. The doctors visited the wards and held a clinic in the hospital. Papers were presented at the afternoon session. During the business meeting the provisional constitution and by-laws were amended and adopted. The club will meet at least once a year. Next year members from the Midwest and the West Coast are expected to attend. Officers are Dr. Walter L. Thomas of the university, president; Dr. Robert Alter, Duke house staff, vice-president, and Dr. John R. Kernodle, Burlington, secretary-treasurer.

VIRGINIA

University Appointments.—Dr. Walter O. Klingman has been promoted from associate professor to professor of neurology and psychiatry at the University of Virginia Department of Medicine, Charlottesville. Other promotions announced recently include those of Dr. Kenneth R. Crispell to assistant professor of internal medicine; Dr. Robert A. Kelley to assistant professor of urology; Dr. Preston B. Lowrance to assistant professor of internal medicine, and Hans Hoch, Ph.D., to assistant professor of biochemistry.

GENERAL

Radiological Award Given Dr. Pfahler.—The gold medal of the Radiological Society of North America was presented to Dr. George E. Pfahler, Philadelphia, December 6 at the annual banquet of the society in Chicago. The medal, awarded for outstanding achievement in radiology, was presented by Dr. John S. Bouslog, Denver, retiring president of the society.

Railway Surgeons Meeting.—The Atlantic Coast Line Railway Surgeons Association will hold its 48th annual meeting at the Fort Sumpter Hotel, Charleston, S. C., January 24-25. Visiting physicians are welcome. There is no registration fee. Speakers include Dr. Joseph S. Stewart, Miami, Fla., president, Southeastern Surgical Congress; Dr. Samuel Marshall, Lahey Clinic, Boston, and Dr. Elam C. Toone, Medical College of Virginia, Richmond.

Occupational Therapy Journal Changes Name.—*Occupational Therapy and Rehabilitation* is changing its name to the *American Journal of Physical Medicine* for the first issue in 1952. It is changing its scope to include the entire field of physical medicine and rehabilitation. The new editor Dr. Harry D. Bouman, professor of physical medicine at the University of Wisconsin Medical School, Madison, will be assisted by a 19 member editorial board.

Science Writing Awards.—The American Association for the Advancement of Science presented its annual prizes of $1,000 each at its convention December 28 in Philadelphia. One award went to Victor Cohn of the *Minneapolis Tribune* for a series of articles on the problems and opportunities of old age, entitled "Never Too Old," published last January. The second prize of $1,000 went to Mr. John Lear, an associate editor of *Collier's* for his article, "Atomic Miracle," in the April 21 issue of the magazine. It described pioneer medical research being done with nuclear reactions at Brookhaven National Laboratory, Upton, L. I., N. Y.

Obesity and Length of Life.—New evidence that obesity shortens life has been provided by a study of mortality among more than 50,000 persons who were limited to substandard life insurance because of obesity, according to Dr. Louis I. Dublin of the Metropolitan Life Insurance Company. Mortality for the overweight group was about 50% higher than that of persons accepted for standard insurance. Men with marked obesity had a mortality of 70% above standard risks compared with an excess of 42% for those moderately obese. Among women the increased mortality was 61% and 42% for the marked and moderately obese, respectively.

Grants for Research.—Two grants for medical research have been awarded by Sharp & Dohme, Inc., to scientists at Western Reserve University, Cleveland, and at the University of Texas. These are two of four grants thus far awarded from a $50,000 fund recently created by Sharp & Dohme for the advancement of fundamental research in the fields of biology, microbiology, and chemistry. A three-year grant of $6,000 for fundamental research in the virus field was awarded to Lester O. Krampitz,

Ph.D., director of microbiology, Western Reserve University. Another $6,000 grant was awarded for basic research to Esmond E. Snell, Ph.D., of the biochemical institute, University of Texas, Austin. He will use the grant for research in bacterial metabolism.

Health Departments in the United States.—The national advisory committee on local health units of the National Health Council reported December 7, according to the *New York Times,* that half of the counties of the United States do not have the elementary protection of a local fulltime health department. The report, based on figures of the United States Public Health Service, was made by Dr. Haven Emerson, professor emeritus of public health practice, Columbia University, New York, and Dr. Lee A. Rademaker of Salisbury, Md. The total number of health departments has risen from 1,110 to 1,228 since 1946; the number of counties covered has risen from 1,332 to 1,566, and the population living in communities protected by health departments has increased from 91,000,000 to 108,000,000, he reported.

National Conference on Medical Service.—This conference will be held at the Palmer House, Chicago, February 10 under the chairmanship of Dr. Harlan A. English, Danville, Ill. The Illinois State Medical Society will act as host. The subject of this year's conference will be "America's Next Social and Health Crisis." During the morning, according to the preliminary program, the care of the aged with chronic disease will be the subject of two papers to be presented by an insurance actuary and a representative of a city welfare department. The afternoon program is as follows:

George Craig, Indianapolis, past commander of the American Legion, Future Implications of Veterans' Medical Care.
Admiral Joel T. Boone, chief medical officer, Veterans Administration, Washington, D. C., Unusual Problems in Veterans' Medical Care.
Speaker to be announced, Hometown Veterans' Care, A Success or a Failure?

The luncheon speaker will be the Hon. Everett M. Dirksen, U. S. Senator from Illinois, whose subject will be "Our Citizens and Their Doctors."

General Practice Residency Scholarships. — The American Academy of General Practice announces that it will award annually five $1,000 stipends to outstanding medical students interested in taking general practice residencies, the money to be paid in monthly installments during the year of residency. A fund for this purpose has been contributed to the academy by Mead Johnson & Co. Winners will be selected by the Mead Johnson General Practice Scholarship Committee made up of prominent physicians who serve as trustees of the fund. The committee will name each year five medical schools whose students will be eligible for the award, and the deans of these schools will each nominate three candidates from the senior class. Final selection will be made from this list. In order to begin the program in 1952, the committee will choose interns from five selected hospitals for that year's award. Winners and alternates for 1952 and 1953 will be announced March 25 during the annual scientific assembly of the academy in Atlantic City, N. J. The scholarship committee, headed by chairman Dr. William B. Hildebrand of Menasha, Wis., includes Drs. William H. Anderson of Booneville, Miss., Mary E. Johnston of Tazewell, Va., Dave F. Dozier of Sacramento, Calif., H. Kenneth Scatliff of Chicago, and Fred A. Humphrey of Fort Collins, Colo. Award winners will be selected on the basis of scholarship, professional aptitude, and fitness for general practice.

Courses in Allergy.—The American Academy of Allergy will present two postgraduate courses at the Hotel Sherman in Chicago February 15-17. The first, meeting on February 15, will consider physical methods, including electrophoresis and ultracentrifuge, quantitative precipitin techniques, complement fixation tests, the Schultz-Dale technique, and tracer techniques. The faculty will be Drs. Paul R. Cannon, Saul Malkiel, and Elmer L. Becker, Chicago; Dr. Frank Dixon Jr., Pittsburgh; Dr. Samuel C. Bukantz, St. Louis, and E. Jack Coulson, Ph.D., Washington, D. C. On February 16 residents and attending staffs of universities and hospitals in Chicago will present patients to guest lecturers for diagnostic and therapeutic comment and advice. The morning program will be devoted to patients with bronchial asthma and emphysema, and in the afternoon, complications in allergic diseases and uncommon allergic disorders will be presented. The second course in dermatologic allergy will be given on February 17. The emphasis will be on morphologic recognition and differential diagnosis of various allergic dermatological entities, including methods and techniques of determining the causal substance for a given allergic dermatosis, therapy, both topical and systemic, and psychosomatic aspects. The faculty will be Dr. Louis A. Brunsting, Rochester, Minn.; Drs. Stephan Epstein and Francis W. Lynch, Minneapolis; Drs. Adolph Rostenberg Jr., Stephen Rothman, and James R. Webster, Chicago; and Dr. Oscar Swineford Jr., Charlottesville, Va. The fee is $25 per person for the entire course or any part of it. A course on mold and pollen identification will be conducted as a laboratory course for three days at Northwestern University Medical School. It is open to physicians and technicians.

Eye, Ear, Nose and Throat Section Meetings.—The American Laryngological, Rhinological, and Otological Society, Inc., will hold section meetings throughout the country during January. The first is to be at the Waldorf-Astoria Hotel, New York, on January 11. Those presenting papers by invitation include:

Stewart Wolf, New York, Causes and Mechanisms in Rhinitis.
Monroe J. Romansky, Washington, D. C., Current Trends in the Use of Antibiotics.
Joseph L. Goldman, New York, Bacteriologic Aid in Rhinologic Disease.

The Southern section will meet at the Atlanta Athletic Club January 13. The eight papers to be presented include one by Dr. John E. Bordley, Baltimore, who will speak by invitation on "The Problem of the Pre-School Deaf Child."

The Western section of the society will meet January 19-20 at the Los Angeles County Medical Society Building in Los Angeles. The banquet will be at 7 p. m. at the Jonathan Club. Those presenting papers by invitation include:

Ralph G. Rigby, Salt Lake City, Present Status of Diagnosis and Treatment of Globus Hystericus.
William H. Rustad, San Francisco, Revised Anatomy of Recurrent Laryngeal Nerves: Surgical Importance Based on the Dissection of 100 Cadavers.
James W. Phillips, Seattle, Early Otolaryngological Symptoms in Multiple Sclerosis, with Suggested Therapy.

The Middle section of the society will meet at the Indianapolis Athletic Club. The authors of papers being presented by invitation include:

Henry A. Brown, Rochester, Minn., Ear Findings in Cerebellopontine Angle Tumors.
John J. Mahoney, Ph.D., Indianapolis, Hormones in Otolaryngology.
E. N. Kime, Indianapolis, Cephalgic Mechanisms with Special Reference to the Seventh Cranial Nerve.

Report of Association for Mental Health.—According to the first annual report of the National Association for Mental Health, mental illness continues to be the nation's number one health problem. Today there are more people in mental hospitals than there are in all other types of hospitals, and mental hospitals are still sadly understaffed. There are only enough clinics to take care of a fraction of those who need them, the association asserts. Moreover, the amount of money being spent on research for the discovery of the causes and methods of treatment is pitifully inadequate. The association is a national citizens' association formed in September, 1950, through the consolidation of the three leading organizations in the field. It does not give direct psychiatric services, but devotes itself to bringing about improvement and expansion of these services through consultation, education, and research. Currently 17 scientists are working in as many separate studies under the guidance of the association's medical director, Dr. George S. Stevenson, and Dr. William Malamud, professor of clinical psychology at Tufts College Medical School. The project is financed by the 33rd Degree Scottish Rite, which increased its annual grants from $50,000 to $70,000 for 1952. The report also reveals that the association sponsors and helps finance inspection and rating programs for public mental hospitals. These surveys, conducted by the American Psychiatric Association, are designed to promote the establishment of higher standards in these hospitals. During the year 42 hospitals in 11 states, Canada, and Hawaii have been inspected. Organizational work carried on by the association contributed in the past year to the formation of 68 new citizens' mental health associations throughout the country.

DEATHS IN OTHER COUNTRIES

Dr. K. Subrahmanyan, member of the World Health Organization's Expert Committee on Cholera, was killed November 20 in an airplane crash between New Delhi and Calcutta while returning from the Cholera Expert Committee session in New Delhi. He had been expected to join the staff of the South-East Asia Regional Office as its first environmental sanitation adviser.

MEETINGS

AMERICAN ACADEMY OF ALLERGY, Hotel Sherman, Chicago, Feb. 18-20. Dr. Ben Z. Rappaport, 208 East Wisconsin Ave., Milwaukee 2, Secretary.

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS, Palmer House, Chicago, Jan. 26-31. Dr. Harold B. Boyd, 122 South Michigan Ave., Chicago 3, Secretary.

AMERICAN COLLEGE OF CLINIC ADMINISTRATORS, Conrad Hilton Hotel, Chicago, Jan. 13-15. Dr. R. J. Wilkinson Jr., 1115 Sixth Avenue, Huntington, W. Va., President.

AMERICAN COLLEGE OF RADIOLOGY, Palmer House, Chicago, Feb. 8. Mr. William E. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

AMERICAN SOCIETY FOR SURGERY OF THE HAND, Palmer House, Chicago, Jan. 25-26. Dr. J. H. Boyes, 1401 S. Hope St., Los Angeles 15, Secretary.

ANNUAL CONGRESS ON INDUSTRIAL HEALTH, William Penn Hotel, Pittsburgh, Jan. 18-19. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE, Palmer House, Chicago, Feb. 11-12. Dr. Donald G. Anderson, 535 N. Dearborn St., Chicago 10, Secretary.

ATLANTIC COAST LINE RAILWAY SURGEONS ASSOCIATION, Fort Sumpter Hotel, Charleston, S. C., Jan. 24-25. Dr. Braswell E. Collins, Waycross, Ga., Secretary.

INTERNATIONAL MEDICAL ASSEMBLY OF SOUTHWEST TEXAS, Municipal Auditorium, San Antonio, Jan. 22-24. Dr. John J. Hinchey, P. O. Box 2445, San Antonio 6, Secretary.

NATIONAL CONFERENCE ON MEDICAL SERVICE, Palmer House, Chicago, Feb. 10. Dr. Harlan A. English, 139 North Vermilion St., Danville, Ill., Secretary.

NATIONAL CONFERENCE ON RURAL HEALTH, Shirley-Savoy Hotel, Denver, Feb. 28-Mar. 1. Dr. F. S. Crockett, 535 North Dearborn St., Chicago 10, Chairman.

SECTIONAL MEETINGS, AMERICAN COLLEGE OF SURGEONS:

Birmingham, Ala., The Tutwiler, Jan. 10-12. Dr. James M. Mason III, 1023 South 20th St., Birmingham, Chairman.

Panama City, R. P., El Panama, Jan. 16-18. Dr. Jaime De la Guardia, Box 808, Panama City, R. P., Chairman.

Dallas, Texas, Hotel Adolphus, Feb. 4-6. Dr. John V. Goode, 2618 Oak Lawn Ave., Dallas 4, Chairman.

Atlantic City, N. J., Chalfonte-Haddon Hall, Feb. 11-12. Dr. David B. Allman, 104 St. Charles Place, Atlantic City, Chairman.

Quebec, Can., Chateau Frontenac, Feb. 18-19. Dr. Paul A. Poliquin, 71 St. Ann St., Quebec, Can., Chairman.

SOUTHERN SECTION, AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, Atlanta, Ga., Jan. 14. Dr. Lester A. Brown, 490 Peachtree St. N.E., Atlanta 3, Ga., Vice President.

TRI-STATES MEDICAL ASSOCIATION OF THE CAROLINAS AND VIRGINIA, Roanoke, Va., Feb. 18-19. Dr. James N. Northington, 306 North Tryon St., Charlotte 2, N. C., Secretary.

INTERNATIONAL

AUSTRALASIAN MEDICAL CONGRESS, Melbourne Victoria, Australia, Aug. 22-30. Dr. C. H. Dickson, Medical Society Hall, 426 Albert St., East Melbourne, Victoria, Australia, Hon. General Secretary.

COMMONWEALTH AND EMPIRE HEALTH AND TUBERCULOSIS CONFERENCE, Central Hall, London, England, July 8-13. Dr. J. H. Harley Williams, Tavistock House North, Tavistock Sq., London, W.C.1, England, Secretary General.

CONGRESS OF THE INTERNATIONAL DIABETES FEDERATION, Leyden, Netherlands, July 7-12. Dr. F. Gerritzen, 33. Prinsegracht, The Hague, Netherlands, Secretary.

EUROPEAN SOCIETY OF CARDIOVASCULAR SURGERY, Strasbourg, France, Oct. 3-4. Sir James Learmonth, Department of Surgery, University New Buildings, Edinburgh 8, Scotland.

INTERAMERICAN CARDIOLOGICAL CONGRESS, Buenos Aires, Argentina, Aug. 31-Sept. 7. Dr. Blas Moia, Larrea 1132, Buenos Aires, Argentina, Secretary-General.

INTER-AMERICAN CONGRESS OF RADIOLOGY, Mexico City, Mexico, Nov. 2-6. Dr. Guido Torres Martinez, Marsella No. 11, Mexico, D.F., Secretary-General.

INTERNATIONAL COLLEGE OF SURGEONS, Madrid, Spain, May 20-24. Dr. Max Thorek, 850 West Irving Park Road, Chicago, Ill., U. S. A., Secretary-General.

INTERNATIONAL CONFERENCE ON VITAMINS AND METABOLISM, Havana, Cuba, Jan. 25. Dr. Angel Vieta Barahona, Medical School, University of Havana, Havana, Cuba, General Chairman.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Friends House, London, N.W.1, Eng. Sept. 15-18. Sir Harold Boldero, 12 Pall Mall East, London, S.W.1, England, Secretary.

INTERNATIONAL CONGRESS ON NEUROPATHOLOGY, Rome, Italy, Sept. 8-13 Dr. Armando Ferraro, 722 W. 168th St., New York, N. Y., U. S. A., Secretary General.

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE, London, England, July 14-19. Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London, W.C.2. England, Hon. Secretary.

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE, Panama City, R. P., Feb. 24-29. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York, N. Y., U. S. A., Executive Director.

NEURORADIOLOGIC SYMPOSIUM, Stockholm, Sweden, Sept. 17-20. Docent Ake Lindbom, Symposium Neuroradiologicum, Serafimerlasarettet, Stockholm K., Sweden, Secretary.

PAN AMERICAN CONGRESS OF OPHTHALMOLOGY, Mexico City, Mexico, Jan 6-12. Dr. Luis Sanchez Bulnes, Gomez Farias 19, Mexico 4, D.F., Secretary-General.

PAN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY AND BRONCHOESOPHAGOLOGY, Havana, Cuba, Jan. 20-24. Dr. Pedro Hernandez Gonzalo, 8 No. 358, Vedado, Havana, Cuba, General Secretary.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*, Jan. 28-30. All centers where there are five or more candidates. Final date for filing application was Dec. 17. Exec. Sec., Mr. John B. Hubbard, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: Various Locations, July 18. Final date for filing application is Jan. 18. Sec., Dr. C. B. Hickcox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various centers. March 1952. *Oral.* Chicago, May 1952. Final date for filing application is Feb. 1, 1952. Candidates for these tests must have completed three years of approved training prior to July 1, 1952. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May 1952. Final date for filing applications for the May 1952 examination is Jan 1, 1952. Sec., Dr. W. J. German, 789 Howard Ave., New Haven 4, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written.* Feb. 1, 1952. Final date for filing applications was Nov. 1. *Oral.* Chicago, June 9-13, 1952. Final date for filing application is Feb. 1, 1952. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Twenty-five centers, Feb. 4-5, 1952. Sec., Dr. Edwin B. Dumphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY. *Part II.* Chicago, Jan. 23-25. Final date for filing applications for the 1952 Part II examinations was Aug. 15. Sec., Dr. Harold A. Sofield, 122 S. Michigan Ave., Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY. Toronto, May 13-17; Chicago, Oct. 6-10. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: Written examination under local monitors, Jan. 11. This is the only written examination which will be given during 1952. *Oral.* New York City, Feb. 1-3; St. Louis, Mo., Mar. 21-23; Washington, D. C., May 3-5; San Francisco, late June; Chicago, October and Boston, late November. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: *Parts I and II.* Chicago. June 9-10. Sec., Dr. Robert L. Bennett, Georgia Warm Springs Foundation, Warm Springs, Ga.

AMERICAN BOARD OF PREVENTIVE MEDICINE AND PUBLIC HEALTH. *Written.* Berkeley, Calif., Minneapolis, New Orleans and Baltimore. April 18. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

AMERICAN BOARD OF PROCTOLOGY. *Part I.* Kansas City, Minneapolis, Philadelphia and San Francisco. May 3. Examination includes both oral and written examinations in the basic sciences. *Dates and places tentative.* Sec., Dr. Louis A. Buie, 102-110 2d Ave., S.W., Rochester, Minn.

AMERCIAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral* New York, Dec. 17-18. Final date for filing applications was Sept. 1. Act. Sec., Dr. David A. Boyd Jr., 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Spring 1952. Final date for filing application is Dec. 31. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

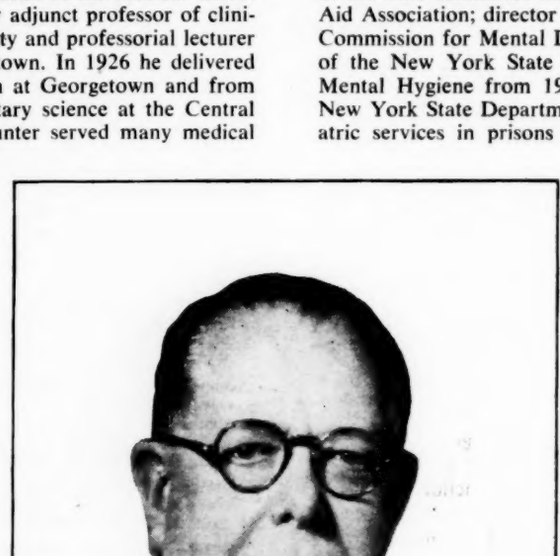
AMERICAN BOARD OF SURGERY: *Written.* Various Centers. March 1952. Final date for filing application was Dec. 1, 1951. The following written examination will be given in October 1952. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 9-13, 1952. Final date for filing applications was Sept. 1. Sec., Dr. Harry Culver, 30 Westwood Rd., Minneapolis 16.

BOARD OF THORACIC SURGERY: Various parts of the country. *Written.* Feb. 29, 1952. Final date for filing application is Jan. 15. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2.

DEATHS

Hunter, Oscar Benwood ✠ Washington, D. C., Vice-President of the American Medical Association, 1951-1952, died suddenly December 19, aged 63, of a heart attack. Dr. Hunter was born in Cherrydale, Va., Jan. 31, 1888. In 1912 he received his medical degree from George Washington University, where he received his A.B. degree in 1916 and his A.M. in 1917. Following graduation from medical school, Dr. Hunter joined the staff of his alma mater as instructor in anatomy. He was professor of histology and embryology from 1913 to 1916, professor of bacteriology and pathology from 1916 to 1932, acting dean of the dental school in 1918, and assistant dean of the medical school from 1918 to 1932. He was formerly adjunct professor of clinical medicine at Georgetown University and professorial lecturer at American University and Georgetown. In 1926 he delivered the lecture of the Kober Foundation at Georgetown and from 1932 to 1940 was professor of sanitary science at the Central Training School for Nurses. Dr. Hunter served many medical organizations in an official capacity. He was past president of the Southern Medical Association, Medical Society of the District of Columbia, George Washington University Medical Society (also secretary since 1939), Washington Society of Pathologists, and American Therapeutic Society, of which he had been secretary. Dr. Hunter was a fellow of the American College of Physicians and the College of American Pathologists, of which he had been a governor, and an associate of the International College of Surgeons. He held memberships in the American Hospital Association, Washington Heart Association, Washington Academy of Sciences, Washington Academy of Medicine, International Association of Medical Museums, District of Columbia Rheumatism Society, Diabetes Association of the District of Columbia, American Heart Association, American Association of Anatomists, Society of American Bacteriologists, American Association of Pathologists and Bacteriologists, American Society of Clinical Pathologists, American Association for the Advancement of Science, American Association for the Study of Neoplastic Diseases, Association of Military Surgeons of the United States, Reserve Officers Association of the United States, and the American Public Health Association. Dr. Hunter was also a member of many other organizations such as the National Safety Council, Board of Trade, and Chamber of Commerce of the U. S. A. He was a major in the medical reserve corps of the U. S. Army (inactive). He was a consultant in pathology at the Montgomery County General Hospital in Olney, Md.; pathologist-in-chief at the George Washington University Hospital and Dispensary from 1916 to 1932; pathologist of the Doctors Hospital since 1940 and the Sibley Memorial Hospital since 1925. In 1928-1929 and 1929-1930 he was president of the General Alumni Association of George Washington University; he was secretary of the Washington Medical Building Corporation, Columbia Medical Building Corporation, Columbia Operating Corporation, and the Doctors Hospital. Dr. Hunter contributed many articles to medical journals.



OSCAR BENWOOD HUNTER, M.D., 1888-1951

✠ Indicates Fellow of the American Medical Association.

Branham, Vernon C. ✠ Silver Spring, Md.; born in Denver, May 26, 1889; University of Colorado School of Medicine, Denver, 1919; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association and the American Psychopathological Association; at one time secretary of the American Association of Mental Hygiene Executives; president of the National Association of Psychiatric Clinics; member of the New York State Board of Psychiatric Examiners; director of the Research Workers in Psychiatric Approach to Problems in Criminology; director of the state committee on mental hygiene of the State Charities Aid Association; director of psychiatric clinics, New York State Commission for Mental Defectives from 1924 to 1927; director of the New York State and New York City Committees on Mental Hygiene from 1927 to 1930; deputy commissioner of New York State Department of Correction in charge of psychiatric services in prisons from 1930 to 1935; senior assistant physician, New York State Psychiatric Institute, New York, from 1920 to 1923; director of the New York State Psychiatric Institute Medical Center in New York, 1928-1929; superintendent of the Woodbourne (N. Y.) Institution for Defective Delinquents from 1935 to 1947; first assistant physician, and assistant superintendent, Institution for Defective Delinquents, in Napanoch, N. Y., in 1924; served on the consultant staff in neurology and psychiatry at Monticello (N. Y.) Hospital; chief of the outpatient department, neuropsychiatric division, Veterans Administration in Washington, D. C.; editor of the *Journal of Clinical Psychopathology*, formerly *The Journal of Criminal Psychopathology*, which he had edited and published; one of the editors of the "Encyclopedia of Criminology"; died October 23, aged 62, of coronary occlusion.

Stetten, DeWitt ✠ New York; born in New York Jan. 22, 1881; Columbia University College of Physicians and Surgeons, New York, 1901; formerly clinical professor of surgery at his alma mater from 1909 to 1918; member of the founders group of the American Board of Surgery; in 1929 president, a trustee from 1932 to 1935, and chairman of the board in 1935 of the Medical Society of the County of New York; member of the American Association for Thoracic Surgery, American Gastro-Enterological Association, International Society of Gastro-Enterology, National Tuberculosis Association, American Cancer Society, Association of Military Surgeons of the United States, American Association for the Advancement of Science, Academy of Political Science, New York Surgical Society, New York Society for Thoracic Surgery, New York Pathological Society, and Military Order of the World Wars; fellow of the American College of Surgeons and the New York Academy of Medicine; veteran of the Spanish-American War and World War I; for many years affiliated with Lenox Hill Hospital; at one time on the staff of Beth Israel Hospital; president of the board of trustees of the Blood Transfusion Association of New York, chairman of the medical committee for the local Red Cross Blood Donor Service, and secretary of the board of the United

Medical Service; died November 10, aged 70, of coronary thrombosis.

Stevenson, Walter Davis ✠ Quincy, Ill.; born in Baltimore Oct. 28, 1883; Baltimore Medical College, 1906; formerly instructor at his alma mater; specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology; president of the Illinois State Medical Society, 1949-1950, chairman of its council, 1946-1948, and formerly councilor of the Sixth District; a charter member, president of the board of trustees, member of the advisory committee, and in 1935 first president of the Mississippi Valley Medical Society, which awarded him its 1942 Distinguished Service Award; past president and secretary of the Adams County Medical Society; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; served overseas during World War I and was chief ophthalmologist for the American Expeditionary Force Base Hospital 54; formerly member of the county board of health; visiting eye surgeon at various mission hospitals in India, 1937-1938; affiliated with Blessing and St. Mary's hospitals; extramural surgeon, Illinois Eye and Ear Infirmary in Chicago; attending eye surgeon for the Veterans Administration; aviation examiner, Civil Aeronautics Authority; oculist for the Chicago, Burlington, and Quincy Railroad; for many years on the editorial board of the *Mississippi Valley Medical Journal;* formerly editor of the *Quincy Medical Bulletin;* died October 26, aged 67, of cerebral hemorrhage.

Allen, Victor Kirkpatrick ✠ Tulsa, Okla.; born in Hope, Ark., in 1888; Tulane University of Louisiana School of Medicine, New Orleans, 1915; specialist certified by the American Board of Surgery and the American Board of Proctology; member of the American Proctologic Society and International College of Surgeons; fellow of the American College of Surgeons; president of the Tulsa County Medical Society in 1948; at the time of his death was serving his second term as councilor to the Oklahoma State Medical Association; served with the American Expeditionary Forces in France during World War I; one of the founders and a member of the board of trustees of the Blue Cross Plan of Oklahoma; largely responsible for establishing the Tulsa County Red Cross Blood Center, and the health and accident group insurance plan of the state medical association; affiliated with St. John's Hospital; member of the board of governors of Hillcrest Hospital, where he died November 9, aged 63, of complications from polycythemia.

Aldridge, James Wesley, Covington, Ind.; University of Illinois College of Medicine, Chicago, 1913; member of the American Medical Association; served overseas during World War I; during World War II served on the Selective Service Board and was its president at the time of his death; died in St. Elizabeth's Hospital in Danville, Ill., October 30, aged 60.

Altenhofen, Allton Rheinhold ✠ Wauwatosa, Wis.; born in Madison, Wis., May 8, 1894; Marquette University School of Medicine, Milwaukee, 1919; specialist certified by the American Board of Radiology; member of the Radiological Society of North America and the American College of Radiology; affiliated with St. Nicholas and Sheboygan Memorial hospitals in Sheboygan and Misericordia Hospital, St. Anthony Hospital, St. Michael Hospital and St. Joseph Hospital, where he died October 31, aged 57, of pulmonary embolism.

Baldwin, Byron Lee ✠ San Gabriel, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1925; affiliated with Beverly Community Hospital in Montebello; died near Bend, Ore., November 3, aged 54, in an airplane accident.

Barnhart, Edgar G., Omaha; John A. Creighton Medical College, Omaha, 1910; president of the Barnhart Press; served on the staff of Lord Lister Hospital, now known as Bishop Clarkson Memorial Hospital; died November 1, aged 67, of coronary thrombosis.

Barrett, Andrew Linn, Bronxville, N. Y.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1886; died October 1, aged 91, of arteriosclerotic heart disease.

Beakey, Howard Francis ✠ Brooklyn; Long Island College Hospital, Brooklyn, 1923; specialist certified by the American Board of Internal Medicine; served during World War I; formerly assistant clinical professor of medicine at his alma mater; affiliated with Holy Family Hospital, Kings County Hospital and St. Mary's Hospital, where he died November 14, aged 55.

Benner, William Henry, Tiffin, Ohio; Starling Medical College, Columbus, 1897; member of the American Medical Association; served during World War I; for many years county coroner; died October 5, aged 77, of coronary thrombosis.

Blair, Andrew C., Parkersburg, W. Va.; College of Physicians and Surgeons, Baltimore, 1891; died October 23, aged 87.

Block, Alexander, San Diego, Calif.; University of the City of New York Medical Department, 1890; died October 31, aged 84.

Bohannon, Burton ✠ St. Louis; Homeopathic Medical College of Missouri, St. Louis, 1902; on the staff of St. Anthony Hospital, where he died November 6, aged 74, of myocardial infarction.

Brace, Clifford C. C., Berkeley, Ill.; Hahnemann Medical College and Hospital, Chicago, 1919; served during World War I; formerly on the staff of the Veterans Administration Hospital in Hines; died December 2, aged 66.

Brown, Edwards Bennett, Beloit, Wis.; Johns Hopkins University School of Medicine, Baltimore, 1906; affiliated with Beloit Municipal Hospital; public school physician for many years; died in Hinsdale, Ill., September 19, aged 74, of coronary thrombosis.

Brown, Hugh Laurence ✠ Los Angeles; College of Medical Evangelists, Loma Linda and Los Angeles, 1929; affiliated with Beverly Community Hospital in Montebello; died in the vicinity of Klamath Falls, Ore., November 3, aged 47, in a crash of a private plane.

Bullard, Oscar Richard, St. Louis; St. Louis College of Physicians and Surgeons, 1909; physician for the Missouri Athletic Commission; died in Park Lane Memorial Hospital November 9, aged 67, of carcinoma.

Burkett, Richard Clare ✠ Napa, Calif.; University of Illinois College of Medicine, Chicago, 1922; past president of the Napa County Medical Society; served during World War I; member of the board of trustees of Parks Victory Memorial Hospital; died November 3, aged 56, of carcinoma of the liver.

Carney, Joseph Albert, Lewistown, Pa.; Jefferson Medical College of Philadelphia, 1910; died November 1, aged 71, of cerebral hemorrhage.

Morgan, Roy, Springfield, Mass.; Western Reserve University Medical Department, Cleveland, 1909; member of the American Medical Association; retired superintendent of the Westfield (Mass.) State Sanatorium; died October 31, aged 70, of cerebral hemorrhage.

Noffsinger, Henry, Union City, Ind.; Eclectic Medical Institute, Cincinnati, 1884; died in Randolph County Hospital, Winchester, October 31, aged 91.

Pedersen, Hans Christian, Stirling City, Calif.; University of Nebraska College of Medicine, Omaha, 1905; served during World War I; past president of the Dodge County (Neb.) Medical Society; died in Chico October 28, aged 68.

Potter, William Wolcott, Mount Pleasant, Iowa; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1906; died October 2, aged 72, of carcinoma.

Williams, Victor Hugo, San Antonio, Texas; Birmingham Medical College, 1908; member of the American Medical Association; served during World War I; formerly vice-president of the Medical Association of the State of Alabama; president of the Fourth District Medical Association of Alabama; secretary-treasurer of Walker County Medical Society; at one time on the staff of Walker County Hospital in Jasper, Ala., where he was on the school board; on the staff of the Santa Rosa Hospital; died September 11, aged 73, of coronary occlusion.

GOVERNMENT SERVICES

AIR FORCE

Alaskan Hospital News.—At the U. S. Air Force Hospital located at Elmendorf Air Force Base on the southcentral coast of Alaska, the regular program of professional educational and refresher activities has been augmented by a monthly "journal club," providing reviews of noteworthy scientific papers and editorials. Reviews are rotated among the members of the several services of the professional staff.

Bed capacity of the hospital is being expanded by the addition of four wards, now under construction. The first of these should be in operation early in 1952. Recent personnel additions to the hospital staff include Lt. Col. Raymond E. Dockery as hospital executive officer and Maj. Frances F. Kasmark as chief nurse.

Aviation Medicine Division Expands Duties.—The functions of the Aviation Medicine Division have been expanded within the office of the Surgeon General of the Air Force. In addition to work previously assigned, the division will now determine, evaluate, and review medical research requirements and implementation, as well as handle technical information for USAF Medical Service. On behalf of the professional services directorate, the division has maintained supervision of the aircrew effectiveness program and physiological training program. It monitors the Air Force program of preventive psychiatry, provides aeromedical liaison with the Director of Flight Safety Research, and evaluates the medical aspects of survival equipment and training.

DEPARTMENT OF DEFENSE

Priority 1 Officers Induction Postponed.—Induction calls for 333 Priority 1 medical officers originally scheduled for August and for 152 originally scheduled for September have been postponed until February, 1952, by the Selective Service System at the request of the Department of Defense.

The Defense Department emphasized that this delay was possible only because of a sustained volunteer rate. Future inductions, it was stated, would depend on the volunteer rate and should there be insufficient volunteers to meet requirements for medical officers, it would be necessary to make up the shortage by induction.

Priority 1 medical officers are those physicians who received their medical education at government expense, or were deferred from service during World War II to attend school, and who have served less than 90 days in the Armed Forces, the Coast Guard, or the United States Public Health Service.

PUBLIC HEALTH SERVICE

Laboratory Refresher Courses. — Nine laboratory refresher courses covering the serology of syphilis, the Treponema pallidum immobilization test, and laboratory diagnosis of venereal disease will be conducted at the Venereal Disease Research Laboratory in Chamblee, Ga., during 1952. The courses start in January and are open only to senior technicians and to laboratory directors throughout the United States and the territories, who are presently employed in the field. The list of courses scheduled for the 1952 calendar year is as follows:

January 14-25, Serology of Syphilis
March 10-21, Serology of Syphilis
April 14-25, Serology of Syphilis
May 12-24, Serology of Syphilis
May 12-16, Laboratory Diagnosis of Venereal Disease (Directors Course)
May 19-23, Treponema Pallidum Immobilization Test (Directors Course)
September 8-19, Serology of Syphilis
October 13-24, Serology of Syphilis
November 3-21, Preparation and Use of Controls in Serologic Tests for Syphilis

Applications for these courses must be approved by the state health officer or state laboratory director of the region from which they are sent and should be addressed to: Director, Venereal Disease Research Laboratory, Division of Venereal Disease, Box 185, Chamblee, Ga.

More Communities Meet Restaurant Sanitation Requirements.—The number of Americans living in communities which have sanitation regulations for public eating and drinking establishments that meet standards developed by the Public Health Service has more than doubled in the last five years, Dr. Joseph W. Mountin, Chief of the Bureau of State Services, Public Health Service, announced December 3. Ordinances or other regulations meeting Public Health Service standards are now in effect in 675 municipalities and 346 counties in 42 states and the Territory of Alaska, as well as in the District of Columbia. The combined populations having this protection now total more than 82 million. In November, 1946, when the last tabulation was made, the combined populations affected totaled only 40 million.

The standard by which municipal or county regulation of eating and drinking establishments is judged is the "Restaurant Sanitation Ordinance Recommended by the Public Health Service" which was first issued in 1935 and revised in 1938, 1940, and 1943. Copies may be obtained from the Regional Offices of the Federal Security Agency, or they may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

MISCELLANEOUS

Research and Training Programs to Begin.—The 3½ million dollar appropriation for the National Science Foundation in the Supplementary Appropriation Act of 1952, signed by the President, will enable the foundation to start immediately on its two major operating programs: support of basic research in the sciences, and training of scientific manpower. According to Dr. Alan T. Waterman, director of the foundation, about 1½ million dollars of the available funds will be allocated for the support of basic research in biology, medicine, mathematics, the physical sciences, and engineering. Basic scientific research will in most cases be supported by means of research grants. A considerable number of research proposals have been received from investigators in all parts of the United States. Grants will be approved by the director and the 24-member National Science Board, whose chairman is James B. Conant, president of Harvard University.

Applications will be considered from students in the natural sciences who have or will have completed their undergraduate work in any accredited college or university. Fellows may attend any accredited nonprofit institution offering graduate studies in science which approves their application for admission. Inquiries should be addressed to the Fellowship Office, National Research Council, Washington 25, D. C.

National Science Board Elects New Chairman.—Chester I. Barnard, president of the Rockefeller Foundation, was elected chairman of the National Science Board of the National Science Foundation at its annual meeting in Washington Dec. 3, 1951. Mr. Barnard succeeds James B. Conant, president of Harvard University. Edwin B. Fred, president of the University of Wisconsin, was reelected vice-chairman of the board. The new chairman and vice-chairman were elected for two-year terms of office as prescribed by the National Science Foundation Act of 1950. The meeting on December 3 marked the beginning of the second year of operation for the National Science Foundation, which was created by Congress early in 1950. The director and staff of the National Science Foundation have initiated programs in support of basic research in the medical, mathematical, physical, engineering, and biological sciences. Applications are also being received for National Science Foundation graduate fellowships for the academic year 1952-53 in the same fields. The foundation expects to award about 400 such fellowships. Applications may be secured from the Fellowship Office, National Research Council, Washington 25, D. C.

FOREIGN LETTERS

NORWAY

The Influence of Diet on Thrombosis.—Reference has already been made in THE JOURNAL (**143:**757 [June 24] 1950, and **146:** 213 [May 12] 1951) to Professor Axel Strøm's observation that in Norway the prewar rising mortality from diseases of the circulatory system was followed by a decline during the war. He suggested that the severe dietary restrictions entailed by the war were responsible for this blessing in disguise. His associate, Dr. R. Adelsten Jensen, has advanced a corollary thesis to the effect that the same dietetic restrictions reduced the postoperative incidence of thrombosis and embolism during the war. In a lecture at a meeting of the Norwegian Medical Society in Oslo on Sept. 19, 1951, he pointed out that his conclusions were based on 15,442 operations carried out at the Ullevaal and Aker hospitals in Oslo in the period 1940-1948. These operations were complicated by danger of thrombosis, as they involved structures located between the diaphragm and the floor of the pelvis. The thrombosis-embolism rate was about 20 per thousand for this period, the rate being somewhat higher for women than for men and rising with the patients' ages. The patients were classified by age groups; in the youngest, birth to 19 years, there was only one case of embolism. At the Ullevaal Hospital, the thrombosis-embolism rate was highest in the 40 to 59 age group (32.9 per thousand); at the Aker Hospital, this group had a thrombosis-embolism rate of 28.2 per thousand. Each year changes in the rate followed remarkably similar curves in the two hospitals, with a high level at the outbreak of the war in 1940, a rapidly falling rate during the war, and a definite rise after the war, when the nation's diet returned toward normal.

Dr. Adelsten Jensen discussed and then dismissed several alternative explanations of this phenomenon. Errors of diagnosis and registration or classification, changes in hospital routine, including variations in the duration of confinement to bed after operation, and differences in the age distribution of the patients and the nature of the operations they underwent were all found to be unlikely explanations for the U-shaped statistical curves. The most likely explanation is that the wartime diet had a profound influence on the coagulability of the blood. Dr. Adelsten Jensen suggests that this long-term, accidental experiment may be profitably checked by short-time, carefully planned research on hospital patients who have been put on restricted diets, such as slimming diets. In this way, it might be possible to determine the relative importance of a reduction of calories to the changes in the qualitative composition of a given diet.

The Danish Asthma Sanatorium in Norway.—Soon after the war, the Norwegian Red Cross invited the Danish Red Cross to send 80 Danish asthmatic children to Norway, where the inland mountain climate offered advantages not found in the lowlands of Denmark. The first group of children came to Norway in January, 1946, and responded so well to the change of climate that many of them were symptom-free in a few days. Even a considerable time after their return home, the cure was maintained in more than half the children. After the results of the Norwegian hospitality were ascertained, the Danes decided to carry on this scheme at their own expense, and the Asthma Committee of the Danish Red Cross acquired a temporary asthma home in a part of Norway a little above sea level. Here, it was noticed, the "asthma days" to which the children were subject coincided with the foggy days in the district. It was evident, therefore, that the ideal asthma sanatorium must be situated well above fog level, and in this case some 300 m. above sea level. In 1947, the Danes accepted an offer from the Kongsberg district and the Kongsberg Silver Mine of a site nearly 400 m. above sea level. It is situated in the center of southern Norway on an extensive plateau and has a dry inland climate and steady barometric conditions.

By 1949, the new sanatorium was well under way, and in 1950 it was officially opened by Crown Prince Olaf. It has three wings, with accommodation for 60 children and a staff of 17 adults. Contact with animals, likely to provoke asthma, is prevented, and there are no feathers in the building. Most of the children are examined at the allergy department of the Rigshospital in Copenhagen before they leave Denmark; if necessary, they are given specific inoculation treatment, which is resumed after their return to Denmark. In addition to ordinary schooling, the children are given occupational therapy in the form of carpentering for the boys and weaving for the girls. Factors likely to have a bad psychic effect are eliminated as much as possible; the children benefit from contact with fellow-sufferers as they avoid the inhibitions to which asthmatic children are subject when in contact with healthy children. During the four months' stay in the sanatorium the children are given a chance to break the vicious circle of alternating asthma and bronchitis. The ages of the children range from 5 to 13 years.

The Norwegian Mobile Army Surgical Hospital in Korea.—In a recent report on the Norwegian field hospital in Korea, after it had been functioning for more than six months, one of its medical officers, Dr. Bernhard Paus, pointed out that it is one of the six hospitals (the other five being American) serving as mobile army surgical hospitals close to the front. Although 70 to 80% of the patients were ambulant, needing only brief provisional treatment, the remaining 20 to 30% had severe cases and needed more radical treatment. Dr. Paus was impressed by the efficiency with which calls for blood for transfusion were met. The supply never failed, although it took many days for it to travel from American centers. The blood was 10 to 14 days old on reaching the hospital, and it was suitable for use for only a week. Four operating tables were available, and most of the housing was provided by tents covering a floor of sand brought from the nearest river bed. Many of the Mobile Army Surgical Hospitals were moved between 25 and 30 times.

On November 1, the hospital was taken over from the Norwegian Department for Foreign Affairs by the Defense Government. The head of the Norwegian Army Medical Service was put in charge of the administration of the hospital in consultative association with the Norwegian Red Cross. More than half of the staff was changed after the first six months in Korea; the new chief, Dr. Arne Hvoslef, relieved Dr. Herman Ramstad. The former recently studied in the U. S. A. the work of the American Army Medical Service. Some idea of the calls made on the Norwegian field hospital may be given by the fact that during the heavy fighting in October it dealt with more than 1,600 patients in the course of 12 days. Plans are already being discussed for the ultimate fusion of the medical units of the Scandinavian countries into a single permanent teaching hospital, which would be responsible for the training of Korean physicians as well as for the care of Korean patients.

BELGIUM

Radiological Congress.—The eighth congress of French radiologists took place in Brussels. Because the domain of the congress has been extended, its name has been changed to "First Congress of Radiologists of Latin Culture." Professor Maisin of Louvain acted as president, and Professor Vangehuchten presented the inaugural address.

One of the papers read was a report by Coquelet on the physiopathology of joints, a subject that he considers inseparable from the physiopathology of nerves and muscles; for example, the joints constitute a true peripheral regulatory system of tonus. The speaker reminded the audience that the synovial membrane is not an organ but a histiocyte connective tissue; hence, pathology of the joints is to a large extent pathology of connective tissue. Melot studied the chronic, nontuberculous joint lesions

The items in these letters are contributed by regular correspondents in the various foreign countries.

and attempted to correlate the clinical, anatomicopathological, and roentgenologic aspects of the bones with the roentgenologic aspects of the soft tissue. Lesions of rheumatoid arthritis and current, post-traumatic, hemophilic, and tabetic osteoarthrosis were studied and found to have the same roentgenologic aspect.

Leroux reported the results of his research on the examination of joints with the use of contrast media. He stressed the significance of pictures taken of various knee movements. Lateral movements, with the leg in extension, not only improved the arthrographic pictures but also permitted, in some instances, the study of normal and abnormal movements of the meniscuses. Anzilotti, Bollini, and Benassi discussed irradiation therapy of joint lesions in arthritis, arthrosis, and post-traumatic and periarthritic arthropathies. Bacq of Liège reported experiments that lend strong support to the concept that the action of the roentgen rays and ultraviolet rays on the enzymes, the cells, and the organisms is not a direct physical action; chemical substances or free oxidizing radicals (originating mainly from the effect of the rays on the water molecules) are in reality the responsible agents. Most of the action of the ultraviolet and roentgen rays is thus indirect.

Aid to Patients in Their Homes.—A new service has been undertaken by the Belgian Red Cross, which includes loan of sanitary material to patients cared for in their homes. It is for the use of patients with nonchronic disease, persons who have had accidents, and convalescents. The loan may include a hospital bed, bed table, bed pan, bed circle, wheel chair, or smaller items, such as air cushions, irrigators, syringes, or cupping glasses. In addition, certain specific apparatus, such as a walker for restoring walking activity and an apparatus for home delivery, are supplied. If the branch offices cannot furnish this equipment, application may be filed with the General Management of the Red Cross. A minimum rent is charged, and restitution must be guaranteed; however, loan may be granted without any fee on justified request. The material must be returned in good condition. There is a disinfecting station in every service office; approximately 100 offices are in operation throughout the country.

Legislation Dealing with Pneumonoconioses.—Decisions of medical concern were made by the government in regard to pneumonoconiosis as an occupational disease. The patient with pneumonoconiosis must show the following radiological and clinical symptoms in order to be considered as suffering from an occupational disease that will entitle him to draw compensation: 1. Roentgenologic signs: Either a picture of generalized micronodular or nodular fibrosis of the lungs, with or without signs of pulmonary tuberculosis, or a picture of one or several pseudotumoral fibrous formations in the lungs, with or without signs of pulmonary tuberculosis. 2. Clinical signs: Defective cardiac or respiratory function or poor general health caused by the aforementioned fibrotic process. The aforementioned clinical and roentgenologic signs may be considered as those of pneumonoconiosis, provided the worker has been employed for at least one year, or for several periods totaling at least one year, in work associated with the risk of inhaling noxious dust.

Disease of Boxers.—The *Bruxelles-Médical* recently published a paper by La Cava on a bizzare disease that occurs in boxers. The author named this disease traumatic cranioencephalopathy of boxers.

Three stages of the disease are distinguished as follows:

In the initial phase, after a fierce fight, (more rarely a "knockout"), the patient walks with a slightly incoordinated gait, appears to be confused, and complains of dizziness, incoordination, weakness, and headache. Examination reveals mydriasis, bradycardia, and amnesia. In the primary phase, within several days euphoria and megalomania develop. The patient's movements are uncoordinated (Romberg's sign), and he shows increased tendon reflex. In the secondary phase, psychic disturbances become aggravated; the patient is arrogant and irritable; he walks in a peculiar way. There is increased incoordination and dysarthria. In the tertiary phase, the memory is impaired, and the patient is abulic; his appearance is inexpressive, and his gait is uncertain and tottering. There is trembling, adiadochokinesia, dysarthria, and echokinesis (the patient spontaneously makes defensive gestures). At this stage, the patient is unable to fight. Differential diagnosis may be required to assure the physician that the patient is not suffering from chronic alcoholism, neurosyphilis, multiple sclerosis, or Parkinson's syndrome.

The author believes that this syndrome should be classified among the traumatic cranioencephalopathies, since roentgenography of the cranium reveals thickening toward the interior of the cranial wall and the clinical signs are similar to those of endocraniosis (intracranial hyperostosis). The condition is the sequel to repeated trauma. This is probably due to vasomotor disturbances of the circulation in the diploë after repeated trauma. It is, therefore, a polytraumatic cranioencephalopathy.

Treatment of Cancer by Artificial Radio-Elements.—At the Center for Fight Against Cancer of the University of Liège, Hervé studied the influence of radioisotopes, radiophosphorus and radioiodine in particular, in various diseases and his results are published in the *Revue Médicale* of Liège. He reported that P^{32} seems promising in chronic polycythemia and chronic leukemia; it is definitely less useful in cases of lymphogranulomatosis, reticuloendotheliomas, and lymphosarcomas. I^{131}, in addition to being most useful in the diagnosis of certain forms of thyroid cancer, may be used in the treatment of metastases (especially osseous) of these neoplasms. The author recognizes that P^{32} and I^{131} present real hazards and that conclusions as to their therapeutic usefulness must be reserved.

MEXICO

Fifth Pan-American and Fourth Mexican Meetings of Urology.—At the Fourth Pan-American Urology Meeting, held in Santiago de Chile in 1949, Mexico City was chosen as the place for the fifth meeting. The activities of the fifth convention, held in conjunction with those of the fourth Mexican Urology Convention, took place from the 7th to the 13th of last October, at the Hotel del Prado.

The agenda included the following topics: Traumatic injuries of urethra: (*a*) Etiology and pathogenesis: Dr. Alberto García of Argentina and Dr. Alejandro Palomo of Guatemala; (*b*) Diagnosis: Dr. Ricardo Angulo of Perú and Dr. Alfredo A. Figueroa of Panamá; and (*c*) Treatment: Dr. Edward J. McCague of the U. S. A., and Dr. Carlos Aguirre of Mexico. Anuria: (*a*) Etiology and pathogenesis: Dr. Jorge Lockhardt of Uruguay and Dr. Alberto Guevara Rojas of Mexico; (*b*) Diagnosis: Dr. Roberto González McOliver of Chile, and Dr. Luis A. Sanjurjo of Puerto Rico; and (*c*) Treatment: Dr. Ernesto Puget Romanach of Cuba and Enrique Arce Gómez of Mexico. Genitourinary tuberculosis: (*a*) Etiology and pathogenesis: Dr. Alvaro Cumplido de Sant'-Anna of Brazil and Dr. Herbert Lewy Van-Severen of El Salvador; (*b*) Diagnosis: Dr. Gregorio Mendoza Catacora of Bolivia; and (*c*) Treatment: Dr. Angel Quevedo of Mexico and Dr. Luis Rodríguez Santana of Venezuela.

Besides the official papers, more than 100 communications were discussed in round table meetings. There were participants from most of the urologic associations of North, Central, and South America, including Dr. Campbell Colston, Dr. Baird, Dr. Ewell, Dr. Foldes, Dr. Maurer, Dr. Mitchell, Dr. Pearlman, Dr. Rupel, Dr. Ware, and Dr. Van Duzen, from the U. S. A.; Dr. Guerreiro de Faria, Dr. Couri, and Dr. Monteiro Silva, from Brazil; Dr. Ercole, Dr. González, Dr. Irazu, and Dr. Vilar, from Argentina; Dr. Blondet and Dr. Nicolini, from Perú; Dr. Iglesias de la Torre, Dr. Portilla, Dr. Rodríguez Montoya, and Dr. Velasco Ruiz, from Cuba; Dr. Bianchi, Dr. Pacheco Díaz, and Dr. Vargas Salazar, from Chile. Furthermore, the Sociedad Mexicana de Urología invited as special guests Dr. Robert Gouverneur from Paris and Dr. Alfonso de la Peña from Madrid. Several exhibitions, scientific and commercial, and many social activities were part of the program. The official transactions of the congress will be published sometime before the spring of 1951.

CORRESPONDENCE

SILICON GRANULOMA OF SKIN

To the Editor:—THE JOURNAL for Oct. 20, 1951 (page 751) presents an article by Drs. Ginsberg and Becker entitled "Silicon Granuloma of Skin Due to Traumatic Sand Inoculation." This article is admirable in that it provides an excellent description of a pathologic condition probably of frequent occurrence but rarely recognized by the medical profession.

Possibly the choice of some terminology is unfortunate. Silicon, the element, does not exist in nature and could not even remotely lead to granulomas. Its implied identification with sand may not be warranted. Silicon, the element, is produced in electric furnaces, in fair tonnage, and is used in such industries as aluminum smelting and recovery. Silicon presently is regarded as one of the most inert of all substances. Silica granulomas readily may appear, but silica is silicon dioxide. As between silicon and silica there is a striking dissimilarity in physiologic response. Silica readily produces tissue proliferation as described, but silicon is inert. Since, from time to time, spurious medical legal claims arise alleging pulmonary damage from elemental silicon, industrial toxicologists consistently seek the recognition that silicon and silica are not identical. On this basis, it is to be hoped that the term "silicon granuloma" may not be used to designate "silica granuloma."

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EXPIRATORY PRESSURE

To the Editor:—Dr. Alvan L. Barach stresses the importance of expiratory pressure breathing with pursed lips in his article "Remissions in Bronchial Asthma and Hypertrophic Pulmonary Emphysema" in THE JOURNAL of Oct. 20, 1951. The fact that the importance of respiratory exercises as a therapeutic measure is explained by Dr. Barach, a student of great experience in respiratory therapy, is to be greatly appreciated. Long personal experience taught me that respiratory exercises are a fundamental part of the treatment of patients with bronchial asthma and pulmonary emphysema.

While not intending to detract from Dr. Barach's splendid article, I wish to point out that I have used expiratory pressure breathing with pursed lips with success in cases of bronchial asthma and pulmonary emphysema in the years before 1935 (Respiratory Therapy and Physical Exercise, *Wien. klin. Wchnschr.* **48**:392 [March 29] 1935). I used this expiratory technique as a therapeutic measure after favorable personal experiences during sport activities and by observations of the physiologist Durig (Vienna), who observed this kind of expiration in lumbermen and miners. Apparently my article escaped Dr. Barach's attention. It is not mentioned in the literature cited by him.

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APPLICATION OF THE "RHYTHM" METHOD OF FAMILY PLANNING IN AN ILLITERATE POPULATION

The "rhythm" method of family planning requires the use of thermometers, calendars, charts, numerals, and words. Such a system cannot be used in countries like India, where the major part of the population is illiterate. Simpler technique, requiring neither reading nor writing, must be taught. An easy method, utilizing beads of bright colors, is described.

An abacus is employed with six threads or lines, each strung with 30 beads corresponding to the 30 days of a calendar month. The entire abacus covers a period of six months. Beads of three colors are used: (1) one red bead for each day of menstruation, (2) one green bead for each day of safe period, and (3) one black bead for each day of fertile period.

The first two lines of the abacus denote the preliminary training period. The patient is taught to thread one bead each day, red for menstruation and green for intermenstrual days. At the end of this period she is asked to report. The third line of the abacus is threaded by one of the personnel of the clinic. The approximate date of ovulation is calculated and the fertile period indicated by black beads. Usually the 12th to the 20th day of a 28-day menstrual cycle is considered the fertile period. This time may be extended to include the 10th to the 22nd day for a greater margin of safety. As she counts off each day, a bead is moved to the left and a string tied to mark off the day of the cycle. This is repeated daily, and the tie is moved progressively to the right, bead by bead. When the indicating string reaches the black bead, the patient is warned of the danger period. Four such cycles are carefully checked at the end of each menstrual period. By this time the person concerned is expected to master the technique.

This is the simple method now in use for teaching illiterate persons in the rhythm method of family planning at the clinic in the Lady Hardinge Medical College Hospital, New Delhi, India.

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PHYSICIAN-PATIENT RELATIONSHIP

To the Editor.—From day-to-day conversations with patients, it is my impression that the average patient does not favor government medicine, but he at times is disgusted with the average physician. On this account, some patients feel that government intervention in the field of medicine might help matters (how I do not know).

The chief gripe, especially in the larger cities, is that, owing to specialization, the physician never really gets to know his patient. As one woman told me, "I had been going regularly to an obstetrician for about seven months when I suddenly developed severe gallbladder colic, which I recognized, having had it before. I called the obstetrician and asked for assistance, giving my name, etc. His first question was 'Are you pregnant?' When assured in the affirmative, and that he had been attending me for seven months, he referred me to another specialist. We are starved for physicians who at least know us, even if they don't know us as well as the old family doctor used to!"

We are all conversant with the fact that medical care today is far superior to that of 20 years ago. We know of the great advantages to the patient which result from group practice, rendering all of modern science's diagnostic and therapeutic methods available to anyone who needs them. What we have lost sight of is that the patient is a human being, not a machine out of tune. We cannot afford to deceive ourselves into thinking that we can treat the body and ignore the psyche.

Any rational general practitioner will readily admit the need for specialists, and does not hesitate to refer any diagnostic or therapeutic problem to the indicated specialist. What we have to correct is the overemphasis on specialization and recognize the need of the patient for someone who inspires confidence in him by knowing him like a book.

Physicians in general must lose their condescending attitude and hurried manner in addressing patients. Patients sense and resent a feeling of superiority on the part of the doctor, and can you blame them? The garage mechanic in this town can tell me pretty nearly as much about my car as I can tell him about his body, but he does not act superior about it.

As for fees, this is a touchy subject and avoided in most medical publications. Let us just say that we must keep them reasonable, fair, and equitable. I know that Johnny Jones does not care whether I come in a Cadillac or in an old Chevrolet—just as long as I get there when he needs me.

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MEDICAL MOTION PICTURES

Trigeminal Neuralgia: 16 mm., color, sound, showing time 28 minutes. Produced in 1950 by and procurable on loan from Robert Dean Woolsey, M.D., 16 Hampton Village Plaza, St. Louis 9.

This film concerns not only the preoperative and postoperative phases of several patients suffering from trigeminal neuralgia but also the operation itself. The explanation and description of the operation are amplified by means of diagrammatic sketches of the anatomy and of the stages and steps of the operation.

The film opens with a long interview with one of three patients suffering from trigeminal neuralgia. During this interview the patient recites the complete history of previous diagnoses and treatment by other doctors, none of which had proved satisfactory. Two other patients are shown and described. Operative procedure is then shown in diagram with scale pictures of the operative site, followed by the actual operative procedure. The technique of selective cutting of the fifth cranial nerve for trigeminal neuralgia with preservation of the ophthalmic branch and of the motor root is demonstrated. The postoperative pictures are shown, with particular emphasis on the regularity of the sensory levels procured.

It is regrettable that the author does not explain why he has the first patient describe previous diagnoses and treatment in such detail. If the author wished to emphasize by this means that in many cases diagnosis is most unwarrantably delayed, that reason should have been specifically stated. Without such an explanation this seems extremely long and pointless.

The operation is satisfactorily performed, and in some instances the visibility is exceptionally good, considering the difficulties under which it is carried out. The sequences showing postoperative tests on all three patients for anesthesia and the mapping out of the areas on the faces might well have been shortened by confining the procedure of testing to one patient and showing the others after the mapping was completed. The demonstrations of closure might also have been shortened.

It seems debatable whether, as is mentioned, 95% of trigeminal neuralgia occurs in the maxillary and mandibular divisions. No mention was made of the point that there are recurrences, especially in the spared ophthalmic fibers, particularly when those fibers were involved before operation. In general, this is a good teaching film and should be of interest to general practitioners, interns, residents, and medical students. The photography and narration are fair to good.

Splenectomy: 16 mm., color, silent, showing time 23 minutes at sound speed. Produced in 1951 by and procurable on loan or purchase from Philip Thorek, M.D., 25 East Washington St., Chicago 2.

This film demonstrates a technique for splenectomy in a case of hypersplenism. The importance of a primary ligation of the splenic artery to control bleeding is stressed. The film opens with a history of the patient to be operated on and the indications for splenectomy. The embryology and the surgical anatomy involved are well demonstrated by colored, animated illustrations. The actual operation is then shown, and the important steps are effectively emphasized by colored illustrations. The pathology is well shown, and the important structures involved in the actual operation are clearly pointed out. The surgical technique employed is good. Although the film could be shortened to advantage, it has good captions, and the photography is excellent. This picture is highly recommended for showing to general practitioners, specialists, residents, interns, medical students, and nurses.

The Key Area (Attic-Aditus-Antrum) in the Chronic Mastoid: 16 mm., color, sound, showing time 20 minutes. Prepared by Gilbert Roy Owen, M.D., Los Angeles. Produced in 1951 by and procurable on rental or purchase from Billy Burke Productions, 7416 Beverly Blvd., Hollywood 36.

This is an attempt to demonstrate graphically the various roentgen projections presently used, all of which inevitably connote, in some degree, distortion of our anatomic teachings. It is probable that the greater the familiarity with the surgical-anatomic picture, the greater the problem of adjusting to such distortions. To this end, the author has attempted to show in the film the nearest possible application of our anatomic memory pattern of the key area. This projection is submitted—not as a modification or a substitute—but as an amplification of the classic Mayer position.

The material is excellent, and the idea and results are good. The new projection is good, but there is a question as to whether a motion picture is the best way to present a subject of this type. A good set of lantern slides might be more effective. This is a highly technical, highly specialized film of interest only to otologists and x-ray technicians who specialize in taking radiographs of the ear. In order to understand the content of this picture fully, repeated showings will be necessary.

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Hospitals, in General: Doctrine of Res Ipsa Loquitur.—The plaintiff sued for damages resulting from burns alleged to have been caused by the negligence of the defendant's hospital. From a judgment for the plaintiff, the defendant appealed to the Supreme Court of Florida.

The plaintiff was admittted to the defendant's hospital during a diabetic coma, and while she was in the hospital and unconscious, she received the burns of which she complains. The defendant contended that there was no evidence that heat was applied to the plaintiff's body in the hospital or, if applied, that it was done negligently, or that the negligent use of heat proximately caused the injury and that therefore the doctrine of res ipsa loquitur did not apply. There was ample proof, said the Supreme Court, to justify a conclusion that the plaintiff's burns were not received before she reached the hospital and that they were received while she was completely helpless and senseless in the hospital. The chief of staff of the hospital, who treated the plaintiff, testified that he was sure the injuries could not have resulted from anything he had done or ordered done, and he was at a loss to understand how they had occurred.

Negligence may not be presumed, said the court, it must be proven. Where direct proof is wanting, however, and such circumstances are shown as to leave no conclusion except that the defendant was at fault, a prima facie case may arise justifying the application of the rule of res ipsa loquitur. In a prior supreme court case, the court said "Establishment of the facts that the instrument causing the injury was in the sole control of the defendant, that the occurrence would not have happened in the ordinary course of events had there been proper care on the defendant's part, provides evidence that the injury sprang from the defendant's negligence."

This statement, continued the Supreme Court, fits the facts of the present case. There is abundant proof that the plaintiff was injured while in the hospital. She could not testify directly about the experience for the obvious reason that she was unconscious. The persons within the hospital immediately charged with her care, protection, and treatment—the chief of staff and the nurses—were patently nonplussed over her mishap. Certainly, said the court, the instrument that caused her injury was in the absolute control of the personnel of the institution, and the plaintiff did not know and could not have known what apparatus was used in injuring her. All this, the court concluded, indicates an "occurrence [that] would not have happened in the ordinary course of events had there been proper care" on the part of persons in the hospital who, although not directly assigned to the plaintiff's case, had, nonetheless, access to her room and to the hospital equipment. We think that the circumstances justify an inference that, while unconscious in a domain strictly the defendant's, the plaintiff was burned by some instrumentality which was negligently used or which should not have been used at all and that consequently the doctrine of res ipsa loquitur was properly invoked. Accordingly the judgment of the trial court in favor of the plaintiff was affirmed.—*West Coast Hospital Association v. Webb, 52 So. (2d) 803 (Fla., 1951).*

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Dermat. and Syphilol., Chicago

64:385-532 (Oct.) 1951. **Partial Index**

*Etiologic and Immunologic Concepts Regarding Sarcoidosis. A. Rostenberg Jr.—p. 385.
Generalized Miliaria Rubra Associated with Abnormal Vitamin A Metabolism. W. C. Lobitz Jr. and R. R. Kierland.—p. 411.
Early Dermatologic Illustration. J. T. Crissey.—p. 417.
Cysteine as Local Protective to Human Skin Against X-Rays. A. H. Slepyan and T. Cornbleet.—p. 425.
Results of Treatment of Acne Vulgaris by Intramuscular Injections of Vitamin A. G. H. Mitchell and T. Butterworth.—p. 428.
Effective Application of Banthine® in Dermatology. C. S. Brown and I. L. Sandler.—p. 431.
Idiopathic Hyperlipemia with Secondary Xanthomatosis: Report of Case. L. Frank and L. M. Levitt.—p. 434.
Results of Topical Application of Cortisone in Congenital Syphilitic Interstitial Keratitis: Preliminary Report of Two Cases. S. Maddin and J. L. Danto.—p. 437.
Occupational Leucoderma from Rubber Dust and Debris. S. J. Zakon and A. L. Goldberg.—p. 441.
Evaluation of New Drug for Topical Therapy of Tinea Capitis. E. Edelson, C. Craster and A. Haskin.—p. 444.
Capillary Resistance Tests. F. W. Hare Jr. and A. J. Miller.—p. 449.
Acne Necrotica: Relation to Acne Necrotica Miliaris and Response to Penicillin and Other Antibiotics. C. Stritzler, R. Friedman and A. B. Loveman.—p. 464.
†Cutaneous Hypersensitivity Due to Beryllium: Study of 13 Cases. G. H. Curtis.—p. 470.
Multiple Miliary Osteomas of Skin. R. G. Carney and C. E. Radcliffe.—p. 483.
Intradermal Leishmanin Test (Montenegro Test) in Diagnosis of Cutaneous Leishmaniasis: Report of Case of Chiclero Ulcer Diagnosed in California. P. Fasal and A. Gradow.—p. 487.
Coincident Infection of Human and Anthropoid with Microsporum Audouini: Report of Case. J. P. Scully and A. M. Kligman.—p. 495.
Green Nails: Role of Candida (Syringospora, Monilia) and Pseudomonas Aeruginosa. M. Moore and M. D. Marcus.—p. 499.

Concepts of Causation of Sarcoidosis.—After reviewing the evidence for and against the tuberculous origin of sarcoidosis, the author concludes that the tuberculous causation of sarcoidosis is most unlikely. Failure to distinguish systemic sarcoidosis from a sarcoid type of cutaneous tuberculosis with positive bacillary findings has resulted in much confusion; consequently the necessity for differentiating these two types of lesions is stressed. Regarding the view that sarcoidosis is not an etiological entity but can be caused by a variety of agents, it should be realized that certain of the arguments and observations, especially those based on negative bacteriologic findings, given against tuberculosis are applicable against any known infectious agent. Thus, by exclusion one is more or less forced to the view that sarcoidosis may be caused by a new infectious agent. A chief argument for the tuberculous origin is the relative anergy to tuberculin of many patients with sarcoidosis, but the theory of "positive anergy" is neither theoretically nor experimentally substantiated. It is reasonably well established that systematized sarcoidosis involves the lymphoreticular structures of the body, suggesting a reticuloendothelial blockade in this disease. Experimental animals with adequately blocked reticuloendothelial systems are less able to produce antibodies and to react to antigens. That this may also be true of patients with sarcoidosis is intimated by their failure to show cutaneous hypersensitivity to BCG inoculation. A tuberculin-neutralizing substance may be found in the serum of patients with sarcoidosis. The author suggests that, if this substance is an antibody, it does not arise in response to the tubercle bacillus but as a result of stimulation by some other micro-organism. An analogous situation occurs in various rickettsial diseases, in which the micro-organismal antigen causes production of agglutinins capable of reacting with an organism unrelated to the etiological agent of the infection.

Hypersensitivity to Beryllium.—The occurrence of dermatitis caused by beryllium compounds in 13 workers employed in two beryllium-extraction plants is reported. The dermatitis was caused by beryllium fluoride in 10 furnace operators, by ground metallic beryllium in 2 bottling machine operators, and by water drippings from the surface of overhead pipes coated with dust of various beryllium compounds in 1 worker. The men frequently did not wear masks and gloves, so that the dust was inhaled as well as deposited on the skin. Conjunctivitis and rhinopharyngitis developed in 8 of the 13 patients. Occasionally, hot particles striking the skin produced acute inflammatory papules and ulcerations on the face, neck, and arms. Patch tests with beryllium compounds were performed in the 13 patients and on 16 volunteer controls who never had been exposed to beryllium compounds. The clinical, histological, and experimental criteria for establishing the dermatitis as an allergic-eczematous type were fulfilled in the 13 patients. Eight of the 16 controls showed spontaneous eczematous reactions 6 to 16 days after the patch tests. Subsequently, eczematous reactions were produced in 48 hours by higher dilutions than the sensitizing concentrations. Pure beryllium is insoluble in sweat and therefore cannot be used for patch tests. Therefore, salts of beryllium had to be used, and anions, acidity, and primary irritancy of soluble beryllium compounds were eliminated as direct factors in clinical dermatitis. The beryllium ion is believed to be the sensitizing allergen. Beryllium fluoride can sensitize the skin to a high degree, which accounts for the high incidence of dermatitis among workers in the fluoride process of beryllium extraction. Beryllium sulfate and beryllium chloride have less capacity than beryllium fluoride to sensitize the skin, while beryllium nitrate was observed to have little or no capacity to sensitize the skin under the conditions of these experiments. For patch tests, 1% or 2% unbuffered solutions of beryllium fluoride, beryllium sulfate, beryllium chloride, beryllium nitrate, beryllium ammonium fluoride, beryllium oxalate, and beryllium benzenesulfonate are suitable. It is suggested that mucous-membrane manifestations and possibly acute pneumonitis may be allergic reactions to beryllium compounds.

A.M.A. Arch. Ophthalmology, Chicago

46:235-362 (Sept.) 1951

Terramycin in Treatment of Trachoma. Yukihiko Mitsui, Chie Tanaka, Hitoshi Toya and others.—p. 235.
Horizontal Squint with Secondary Vertical Deviations. M. J. Urist.—p. 245.
*Effect of Systemic Cortisone and Corticotrophin (ACTH) on Experimental Herpes Simplex Keratitis. J. W. Hallett, I. H. Leopold and C. G. Steinmetz.—p. 268.
Induced Ocular Tuberculosis: Report of Probable Case. W. O. Linhart.—p. 271.
Analysis of Methods for Measuring Diplopia Fields: Introduction of Device for Such Measurements. A. E. Sloane.—p. 277.
Analysis of Ocular Movements by Means of Electrical Method. R. J. Brockhurst and K. S. Lion.—p. 311.
Study of Ocular Movements Under Stress. K. S. Lion and R. J. Brockhurst.—p. 315.
Alopecia Associated with Intraocular Foreign Body: Report of Case. H. McGrath.—p. 319.
Rate of Flow of Aqueous Humor in Normal and Scorbutic Guinea Pigs. E. Bárány.—p. 326.

Systemic Cortisone and Corticotropin in Herpes Simplex Keratitis.—To study the effect of cortisone and corticotropin on virus diseases in general, and herpes simplex in particular, Hallett and associates supplemented their unsuccessful experiments on local cortisone treatment in herpes simplex infections of the rabbit cornea with further experiments utilizing systemic cortisone and corticotropin therapy. In 24 rabbits both corneas were anesthe-

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Titles marked with an asterisk (*) are abstracted.

tized with a drop of 0.5% tetracaine hydrochloride solution. Three linear, superficial, vertical incisions were then made through the corneal epithelium with a Graefe knife. A drop of macerated chorioallantoic membrane from a chick embryo infected with herpes simplex virus was then instilled into the inferior cul-de-sac of each eye. Immediately after corneal inoculation, eight rabbits were given 9 mg. of cortisone acetate daily intramuscularly in divided doses for four days, and then in a single dose for the next three days. Another group of eight rabbits received identical treatment with corticotropin. The third group of eight rabbits constituted the untreated controls. There was no difference between the rabbits receiving cortisone and the corticotropin-treated animals. The controls showed severer involvement up to the fifth day; from then on the treated and the control groups showed almost the same degree of involvement. Thus it may be concluded that both corticotropin and cortisone systemically administered have an identical retarding effect, up to the fifth day, on experimental herpes simplex infections of the rabbit cornea. This is in contrast with the lack of benefit, or even deleterious effect, of local cortisone therapy.

Alabama State Medical Assn. Journal, Montgomery

21:53-80 (Sept.) 1951

Intravenous Demerol and Scopolamine in Management of Labor. A. M. Cowden.—p. 53.
Carcinoma of Skin. K. F. Kesmodel.—p. 56.
Consideration of Hematuria. J. W. Davis Jr.—p. 62.

American Journal of Medicine, New York

11:271-408 (Sept.) 1951

Relationship Between Acidification of Urine and Potassium Metabolism: Effect of Carbonic Anhydrase Inhibition on Potassium Excretion. R. W. Berliner, T. J. Kennedy Jr. and J. Orloff.—p. 274.
Low Potassium Syndrome Due to Defective Renal Tubular Mechanisms for Handling Potassium. D. P. Earle, S. Sherry, L. W. Eichna and N. J. Conan.—p. 283.
Renal Tubular Acidosis with Osteomalacia: Report of Three Cases. K. L. Pines and G. H. Mudge.—p. 302.
Clinical Recognition of Pyelonephritis, with New Stain for Urinary Sediments. R. Sternheimer and B. Malbin.—p. 312.
*Aspiration Biopsy of Kidney. P. Iversen and C. Brun.—p. 324.
Angina Pectoris: Clinical and Pathologic Correlation. P. M. Zoll, S. Wessler and H. L. Blumgart.—p. 331.
Lipoproteins in Atherosclerosis. H. B. Jones, J. W. Gofman, F. T. Lindgren and others.—p. 358.

Aspiration Biopsy of Tumor Tissue.—Although aspiration biopsy of tumor tissue is a classic procedure, the liver and spleen are the only parenchymatous organs that have been examined by this method. Aspiration biopsy of the kidney has been performed only in the course of surgical treatment of hypertension, but no biopsy investigations in intrinsic renal disorders have been reported. Iversen and Brun suggest that renal biopsy techniques will be of value in the study of mild renal disorders that are rarely seen at autopsy and in the initial stages of severe, acute renal disorders. Biopsy will be particularly helpful in acute anuria associated with such conditions as shock, uteroplacental damage, poisoning with sulfonamides or corrosive sublimate, and enteritis. At present all these conditions are classified as lower nephron nephrosis, but the validity of such a generalization is doubtful, and a closer investigation of the histological changes in milder, nonfatal cases is needed. The instruments used for biopsy of the kidney are the same as those used for liver biopsy. Pyelography is performed before a biopsy is made. The needle is inserted nearly to the surface of the kidney, according to the distance measured in the pyelogram; the stylet is removed, a syringe and needle are assembled, and the piston is pulled back and secured with the fixation device. The needle is pushed in by screwing it another 3 or 4 cm. into the tissue, and then the needle and syringe, in which the vacuum is retained, are pulled out. The barrel of the syringe, as a rule, contains a cylinder of renal tissue from 10 to 20 mm. long. The specimen is fixed immediately. Eighty biopsy attempts have been made in 66 patients. Sufficient kidney tissue to permit histological examination was obtained in only 42 cases. Most of the failures occurred in the beginning. With greater experience, the authors are now successful in at least two-thirds of cases. Complications other than transient hematuria have not occurred in any case.

American Journal of Pathology, Ann Arbor, Mich.

27:761-918 (Sept.-Oct.) 1951

Characteristics of Stellate Inclusions in Giant Cells and Associated Tissue Reactions. J. A. Cunningham.—p. 761.
Histoplasmosis and Malignant Lymphoma. J. F. Murray and F. A. Brandt.—p. 783.
Lymphosarcoma of Prostate. L. S. King and T. R. Cox.—p. 801.
*Nature of Diffuse Intimal Thickening of Arteries. S. L. Wilens.—p. 825.
Glomerular Thrombosis. D. B. Jones and W. E. Loring.—p. 841.
Renal Lesions Associated with Experimental Diabetes in the Rat. G. V. Mann, J. W. Goddard and L. Adams.—p. 857.
Transformation of Hepatic Vasculature of Rats Following Protracted Experimental Poisoning with Carbon Tetrachloride: Its Possible Relation to Formation of Urate Calculi in Urinary Tract. H. Ungar.—p. 871.
Senecio Poisoning Exhibiting as Chiari's Syndrome: Report on 12 Cases. G. Selzer and R. G. F. Parker.—p. 885.
Graphite Pneumoconiosis. F. A. Jaffé.—p. 909.

Diffuse Intimal Thickening of Arteries.—Most authors do not consider diffuse intimal thickening a part of the atherosclerotic process, since it may be found without lipid deposition. It occurs early in life, long before any evidence of atherosclerosis can be found, and also in the absence of visible intimal lipid streaks. Nevertheless, several circumstances suggest that this intimal change may be an early but consistent and integral part of the atherosclerotic process. This report presents evidence for this view. Diffuse intimal thickening is more pronounced in arteries that commonly develop atherosclerosis than in those that are involved infrequently. It is greater in portions of the aorta where atherosclerotic plaques develop frequently than where they rarely occur. Diffuse intimal thickening of the aorta increases progressively throughout life and is more pronounced in men than in women. It is increased in the presence of hypertension. Diffuse intimal thickening of the aorta does not occur in species in which atherosclerosis does not develop spontaneously. When cholesterol-fed rabbits are given a normal diet for protracted periods before being killed, fibrous intimal thickening of the aorta occurs that is analogous to that of man. Lipid stains on the diffusely thickened aortic intima often reveal small deposits of lipid. These observations suggest that consistent diffuse overgrowth of intimal tissue early in life is not a natural developmental phenomenon but is related to the mechanism that eventually leads to formation of atherosclerotic plaques. This interpretation suggests that atherosclerosis is not limited to scattered areas of the arterial intima but involves the entire intima.

American Journal of Psychotherapy, New York

5:337-494 (July) 1951. **Partial Index**

Hypothesis Regarding Scope and Limitations of Psychotherapy. G. Hoffmann.—p. 339.
Few Notes on Hypertension. S. Lowy.—p. 362.
*First Aid in Acute Panic States. J. A. M. Meerloo.—p. 367.
Office Management of Functional Gynecological Disorders. F. Wengraf.—p. 372.
Current Trends in Group Psychotherapy. L. Wender.—p. 381.

First Aid in Acute Panic States.—Experiences during the war in the Netherlands and in Britain convinced Meerloo that even in persons well prepared for disaster, extreme danger tends to provoke all kinds of mental defense reactions. Catastrophes like earthquakes, railway accidents, or direct bomb hits may induce a state of infantile regression. Two types of panic behavior are generally observed; the first is a state of mental paralysis in which the patient is apathetic, cannot talk and cannot move, and appears to be dead, except for the fright that shows in his eyes. He does not consciously listen, though his body contracts at every noise. This so-called cataleptic reaction may communicate fear to others. The second type of panic reaction takes the form of temper tantrums, like those in an angry child. A soldier with this form of panic may attack his fellow soldiers or shoot at his own troops. A woman may begin to cry, shout, or walk aimlessly about, wringing her hands. Most variations of such fear reactions involve psychosomatic conversions, examples of which are painful but brief vasoconstriction and frequent urination. An explanation of the cause of these reactions has a sedative effect on the patient. The physician who might be called upon to treat large numbers of mentally disturbed victims should have a simple scheme of treatment ready. A hostile attitude toward a panicky person may increase the panic. Persons obsessed by fear

may react to sedatives in an unexpected way. Alcohol may have a good effect, but it may also provoke a pathological reaction. Barbiturates often make the panicky patient more excited. In cases in which concrete therapy as well as reassurance is needed, aspirin or bromides will suffice in most cases. Oral satisfaction, in the form of hot coffee, soup, or cigarets, may be more effective than any narcotic. Mental first aid in the form of hypnosis or first aid catharsis may prevent the development of deeper neurotic involvement.

Annals of Allergy, Minneapolis

9:563-702 (Sept.-Oct.) 1951

SYMPOSIUM ON NASAL ALLERGY

Nasal Function and Nasal Neurosis. E. A. Brown.—p. 563.
Role of Food Sensitivity in Nasal Allergy. H. M. Davison.—p. 568.
Use of Cortisone and ACTH in Management of Nasal Allergy. G. A. Koelsche, C. K. Maytum, L. E. Prickman and H. M. Carryer. —p. 573.
Miscellaneous Inhalants and Molds. H. E. Prince.—p. 575.
Surgical Management of Nasal and Sinus Allergy. O. E. Van Alyea. —p. 585.
*Observations on Use of ACTH and Cortisone in Treatment of Asthma, Hay Fever, and Other Allergic Conditions. A. S. Friedlaender and S. Friedlaender.—p. 588.
Adrenocorticotropic Hormone (ACTH): Effect on Ragweed Hay Fever. M. Zeller.—p. 603
Absorption of One Per Cent Chlorcyclizine Hydrochloride Cream Through the Skin. A. E. Light and J. A. Tornaben.—p. 607.
Treatment of Allergic Headache. H. D. Ogden.—p. 611.
Cafergot Suppositories in Migraine. M. Fuchs and L. S. Blumenthal. —p. 616.
Tropical Eosinophilia and Its Possible Relationship to Loeffler's Syndrome and Periarteritis Nodosa. V. P. De Zoysa.—p. 621.
Occurrence of Bacterial Respiratory Infections Resembling Epidemic Coryza in Allergic Patients: Etiology and Treatment. F. A. Stevens and E. Gordon.—p. 634.
Cold Urticaria: Investigations Concerning Its Pathogenesis. E. Rajka and A. Asboth.—p. 642.
Psychotherapy in Multiple Sclerosis: Part IV. H. D. Jonez.—p. 653.
Some Psychological Aspects of Treatment of Patients Who Have Food Allergies. W. Kaufman.—p. 660.
Hypoallergic Penicillin: III. Histadyl-Penicillin. S. W. Simon.—p. 665.
Comparison of Anamnestic and Perennial Therapy in Management of Allergic Respiratory Disease. L. E. Abram and J. S. Frankel.—p. 669.

Corticotropin and Cortisone in Allergic Conditions.—Corticotropin (ACTH) or cortisone was given to 91 patients with various allergies, of whom 41 had asthma, 32 hay fever and 18 other allergic conditions, such as atopic dermatitis, contact dermatitis, urticaria, and angioneurotic edema. Of the 41 patients with asthma of 2 to 30 years' duration, 21 were hospitalized. Ten of these were given an initial course of corticotropin by intramuscular injection in total doses of 600 to 870 mg. administered over 6 to 13 days. Good results were obtained in 6, fair results in 2, and poor results in the other 2. Eleven patients were given an initial course of cortisone in daily doses of 300 mg. by intramuscular injection, with good results in four, fair results in four, and poor results in three. The remaining 20 ambulatory patients were given daily doses of 100 to 200 mg. of cortisone orally, with good results in 13, fair results in 3, and poor results in 4. The effects of corticotropin and orally administered cortisone were more quickly evident than those of parenterally administered cortisone in suspension. The effects of orally administered cortisone were more transient. The remissions induced in bronchial asthma by initial courses of corticotropin and cortisone were generally of brief duration, with symptoms recurring in their original severity within a few days or weeks. While the response to repeated courses was frequently as good as to the initial course, symptoms tended to recur more quickly and severely after successive courses. Of the 32 patients with seasonal hay fever, 14 obtained relief from symptoms by intensive administration of corticotropin at six-hour intervals, large single daily injections of cortisone suspension, and administration of cortisone orally every four hours. Of 11 patients with atopic dermatitis treated with corticotropin or cortisone, good results were obtained in 2, fair results in 6, and poor results in 3. Satisfactory results were obtained in two patients with contact dermatitis and in four with angioneurotic edema, while results were poor in one patient with urticaria. Hormonal and metabolic side-effects observed were fluid retention with edema, acne, menstrual dysfunction, adrenal insufficiency, and psychic disturbances. Corticotropin and cortisone may be used to advantage as adjuncts in temporary alleviation of severe symptoms associated with hypersensitivity. The advisability of using the hormones for long periods in such conditions is questionable.

Annals of Internal Medicine, Lancaster, Pa.

35:499-762 (Sept.) 1951. **Partial Index**

Cardiac Symptoms. J. Parkinson.—p. 499.
Clinical and Laboratory Observations on Autoimmune Hemolytic Disease. L. E. Young, G. Miller and R. M. Christian.—p. 507.
*Cobalamin (Vitamin B_{12}) and Intrinsic Factor of Castle. F. H. Bethell, M. E. Swendseid, S. Miller and A. A. Cintron-Rivera.—p. 518.
Use of Cation Exchange Resins in Clinical Situations. T. S. Danowski, L. Greenman, J. H. Peters and others.—p. 529.
Place of Electrocardiogram in Cardiac Diagnosis. F. F. Rosenbaum. —p. 542.
Mediastinal Emphysema Occurring with Therapeutic Pneumoperitoneum: Report of 10 Cases. M. N. Towbin.—p. 555.
Pulmonary Changes Related to Cardiospasm. R. A. Lake.—p. 593.
*Coronary Sclerosis and Pulmonary Hypertension. E. H. Drake.—p. 600.
Liver Function Studies During Cortisone Therapy. J. H. Holmes and S. C. Percefull.—p. 608.
Clinical Application of Pituitary Adrenocorticotropic and Adrenal Steroid Hormones. L. W. Kinsell.—p. 615.
Functional Interrelationship of Anterior Pituitary and Adrenal Cortex. D. J. Ingle.—p. 652.
Meningo-Encephalitis Due to Brucellosis, with Report of Case in Which B. Abortus was Recovered from Cerebrospinal Fluid, and Review of Literature. E. Nichols.—p. 673.
Miliary Tuberculosis in Cortisone Treated Patient: Case Report with Autopsy. R. F. Kleinschmidt and J. M. Johnston.—p. 694.

Vitamin B_{12} and Castle's Intrinsic Factor.—Vitamin B_{12} is but one of a group of related compounds for which the generic term "cobalamin" has been proposed by its American discoverers. Individual compounds have been isolated from biological materials and have been designated as cyanocobalamin (vitamin B_{12}) and hydroxycobalamin (vitamin B_{12b}). All of the cobalamin compounds that have been tested clinically have the same type and apparently the same degree of hemopoietic activity. The efficacy of liver extracts in the treatment of pernicious anemia appears to depend on the amount of these compounds they contain, and solutions of the compounds given by intramuscular injection are effective substitutes for liver extracts. Dietary deficiency of these compounds may result in severe macrocytic anemia. The condition may be completely corrected by the daily oral administration of 5 γ of crystalline vitamin B_{12} without a source of intrinsic factor. Disturbance of intestinal function with diminished absorptive area and dietary inadequacy may give rise to multiple deficiencies associated with macrocytic anemia and require the parenteral administration of both a vitamin B_{12} compound and folic acid (pteroylglutamic acid) to achieve a satisfactory therapeutic result. Efficient utilization of an orally administered B_{12} compound by patients with pernicious anemia requires an exogenous source of intrinsic factor, although the role of intrinsic factor in this potentiating action is not understood. It does not appear to protect the vitamin against destruction in the alimentary tract nor to prevent its utilization by bacteria inhabiting the stomach and small intestine. There appears to be a correlation between the intrinsic factor activity of gastric and duodenal preparations and their capacity to combine with the vitamin and thereby render it incapable of stimulating the growth of micro-organisms which require it. Four cases are reported: two patients with non-Addisonian macrocytic anemia treated with the vitamin without intrinsic factor and two patients with pernicious anemia, one treated with vitamin B_{12b} and desiccated hog duodenal mucosa and the other with heated trypsin digest of an intrinsic factor-vitamin B_{12} complex.

Coronary Sclerosis and Pulmonary Hypertension.—Evidence of coronary heart disease was observed in persons who also showed strain on the right ventricle from one of the following causes: kyphoscoliosis with pronounced chest deformity, spinal arthritis, thoracoplasty, pulmonary fibrosis, emphysema, and pulmonary vascular disease from mitral stenosis. The age of onset of circulatory symptoms was 47 or over. All the patients had angina pectoris or congestive heart failure or both. Electrocardiographic abnormalities were present in all but one case, but there was no typical electrocardiographic pattern of the combined disorders. Cardiac enlargement was the rule, but the enlargement was pronounced only in the three patients who had associated systemic hypertension. Sinus rhythm was present in all. A consider-

able degree of cardiac disability existed, but nearly half the patients were able to follow a gainful occupation with intervals of full disability. Respiratory infections were disabling. Pneumonitis in the patients with angina pectoris led to severe prolonged chest pain of the usual type, which did not respond to glyceryl trinitrate (nitroglycerin). One patient survived three attacks of myocardial infarction following pulmonary infections. Oxygen therapy was beneficial in every instance of respiratory infection for which it was given and seemed particularly helpful in angina pectoris. Chemotherapy and antibiotics were used to combat respiratory infection. The effect of digitalis was often disappointing. A low sodium intake and mercurial diuretics were more efficient methods of treatment for congestive failure. After an injection of mercurial diuretic, administration of glyceryl trinitrate can be spaced at intervals of several days in patients with frequent anginal attacks and persistent pulmonary congestion. Theophylline compounds and antihistaminics were used with varying results. A regimen for daily living and avoidance of exposure to respiratory infections were considered basic treatment. Winter residence in a warm climate is recommended. Two cases are reported in detail.

Miliary Tuberculosis in a Cortisone-Treated Patient.—Acute miliary tuberculosis is reported in a man 59 receiving cortisone for a chronic febrile illness with arthritic manifestations. A 30-day course of cortisone, 100 mg. intramuscularly daily, was given with considerable relief of the joint pains, but the temperature continued to be elevated and the erythrocyte sedimentation rate remained rapid. A second 17-day course of cortisone and a third 25-day course were given during the next two months, with approximately the same effect noted initially. The patient died suddenly and unexpectedly on the 112th hospital day. Necropsy revealed arteriosclerotic heart disease, atherosclerosis of coronary arteries with pronounced insufficiency, chronic organizing pneumonia, acute miliary tuberculosis of the lungs, peribronchial lymph nodes, liver, spleen and adrenal glands, and benign arteriolar nephrosclerosis. Although there was no proof, it is likely that cortisone contributed to the development of acute miliary tuberculosis in this patient. The patient undoubtedly died of arteriosclerotic heart disease. The tubercles were so small that they were not evident in repeated roentgenologic examinations of the chest or in the gross specimens at necropsy, which seemed to indicate that they developed some time after the first course of cortisone was started. Their maximal age was estimated at approximately eight weeks. Certain clinical features of the case were suggestive of periarteritis nodosa, and it was on this basis that cortisone was given. The authors' experience seems to indicate that the administration of cortisone to patients with undiagnosed febrile illnesses should be avoided. Cortisone should not be administered to patients with active tuberculosis until further information is available.

Anesthesiology, New York

12:541-672 (Sept.) 1951. **Partial Index**

The Oximeter—Technical Aid for the Anesthesiologist. C. R. Stephen, H. M. Slater, A. L. Johnson and P. Sekelj.—p. 541.
Reflex Circulatory Responses to Direct Laryngoscopy and Tracheal Intubation Performed During General Anesthesia. B. D. King, L. C. Harris Jr., F. E. Greifenstein and others.—p. 556.
Clinical Application of Automatic Anesthesia. D. E. Soltero, A. Faulconer Jr. and R. G. Bickford.—p. 574.
Effect of Sympathomimetic Amines on Duration of Procaine Spinal Anesthesia. M. Helrich, E. M. Papper, B. B. Brodie and others. —p. 595.
Supervised Emergence of the Anesthetized Patient. C. D. Anderson. —p. 604.
Use of Hyaluronidase in Local and Nerve Block Analgesia Other Than Spinal Block: 1520 Cases. D. C. Moore.—p. 611.
*Inhibition of Sweating in Man by Scopolamine. M. J. Frumin and E. M. Papper.—p. 627.
Pain and Some Factors That Modify It. H. K. Beecher.—p. 633.
Experimental and Clinical Evaluation of Sodium Allyl 1-Methylbutyl Barbiturate (Seconal) Administered Intravenously. R. W. Virtue and J. E. Gootee.—p. 642.
Experiences with Ultra-Short Acting Intravenous Barbiturates Combined with Decamethonium Bromide for Endotracheal Intubation. P. P. Volpitto.—p. 648.

Inhibition of Sweating by Scopolamine.—The control of body temperature during general anesthesia is altered considerably. Earlier workers recognized hypothermia associated with the administration of ether by open methods. This was considered an important factor in the precipitation of shock. In more recent years, particularly with the almost routine employment of closed circuits with carbon dioxide absorption methods, elevated temperatures have been observed frequently during general anesthesia. To investigate elements that might account for diminished heat loss, the authors studied the effect of the inhibition of the sweating mechanism by scopolamine hydrobromide, which was given to unanesthetized men subjected to the stress of environmental temperatures approximately equal to the normal average skin temperature. This drug, commonly employed in preanesthetic medication, is a cholinergic blocking compound and prevents the activation of the sweat glands, which are innervated by cholinergic nerves. Scopolamine was found to depress the rate of sweating in normal man by 35%, which may be a factor in hyperthermia during surgical operations, especially if normal sweating is further impaired by illness or dehydration. The authors feel that this and other aspects of temperature regulation under anesthesia is needed. The pharmacologic aspect, although important, is only one part of the problem. The heat load imposed by drapes, a humid room, proximity of surgeons and lights should be estimated. Consideration should be given to the influence of spinal, peridural, and caudal anesthesia on heat loss by virtue of inhibition of sweating.

Archives of Pediatrics, New York

68:357-406 (Aug.) 1951

Poliomyelitis in a Pair of Identical Twins: Report of Cases. R. R. Haumeder.—p. 357.
*Peptic Ulcer in Childhood: Report of Six Cases. J. B. Gillespie and H. E. Bliss.—p. 361.
Treatment of Refractory Asthmatics. A. Sterling, A. Fishman and V. Sherman.—p. 373.
Local Therapy in Dermatoses of the Newborn Infant. C. B. Heimer, H. G. Grayzel and B. Kramer.—p. 382.

Peptic Ulcer in Childhood.—The six children with peptic ulcer whose cases are reported were observed by Gillespie and Bliss between 1934 and 1951. In each instance the diagnosis was suspected clinically and confirmed by roentgenologic examination. Five were male and one was female, and the ages ranged from 2 to 9 years. Five of the ulcers were duodenal and one was gastric. In at least two of the patients the lesions and symptoms persisted into young adulthood. An obstructing pyloric ulcer developed in the 2-year-old patient, which was possibly initiated or aggravated by the administration of aureomycin. The oldest of the six children, a 9-year-old boy with spastic quadriplegia, sustained a gastric ulcer (Curling's) subsequent to a severe and extensive burn. The possible presence of an inflammatory lesion of the stomach or duodenum should be considered in any child with vague or ulcer-like abdominal complaints.

Archives of Physical Medicine, Chicago

32:567-616 (Sept.) 1951. **Partial Index**

Sex and Age Differences in Mechanical Ability of Physical Therapy Matriculants. F. A. Hellebrandt, S. J. Houtz and T. Pedersen.—p. 567.
Combined Use of Cortisone, ACTH and Rehabilitation Techniques in Certain Arthritis Problems. J. A. Coss Jr. and C. A. Ragan.—p. 572.
Effect of Neostigmine Studies on Spasticity of Skeletal Muscle in Upper Motor Neuron Lesions: Preliminary Report. G. G. Hirschberg and A. S. Abramson.—p. 575.
Diagnostic Features of Electromyography. O. L. Huddleston, E. Austin and A. A. Marinacci.—p. 579.
*Value of Pylon in Pre-Prosthetic Management of Lower Extremity Amputee. L. Blau, J. J. Phillips and D. L. Rose.—p. 585.
Galvanism in Treatment of Ecchymosis. D. Dancik and A. Degroot. —p. 593.

The Pylon in Preprosthetic Management.—Although the use of pylons in preprosthetic training has been criticized in the belief that its use will result in an unnatural gait characterized by circumduction of the stump, an absence of motion at the knee and an abnormal movement pattern in general, these authors believe that pylons have merits that are not fully realized. Thirty-one consecutive amputees were fitted with a pylon while awaiting the permanent prosthesis, with no unfavorable consequence. The abduction gait, bulbous, sensitive stump, and poor pattern of locomotion emphasized in the literature were not encountered. The pylon was acceptable to the patient, and it is durable and easily fabricated. Replacement of the pylon bucket

and lining is cheaper and simpler than similar changes in the permanent prosthesis. Since most of the stump shrinkage occurred while the pylon was worn, its use should not be terminated too soon. Use of the pylon enabled the patient to return to gainful work while awaiting the permanent prosthesis, which is not always possible with the use of crutches alone.

Arkansas Medical Society Journal, Fort Smith

48:113-128 (Oct.) 1951

Optimum Age and Procedure of Choice for Elective Surgery in Infancy and Childhood. L. A. Longino.—p. 113.
Involutional Melancholia and Depressive States: Results of Treatment Over 5-Year Period. L. A. Cohen.—p. 123.
Management of Lesions of Breast. J. H. Growdon.—p. 125.

Bacteriological Reviews, Baltimore

15:105-182 (Sept.) 1951

*Mechanisms of Man's Resistance to Infectious Diseases. W. J. Nungester. —p. 105.
Synthesis of Nucleic Acid by Virus-Infected Bacteria. S. S. Cohen. —p. 131.
Intermediary Metabolism of Mycobacteria. N. L. Edson.—p. 147.

Mechanisms of Resistance to Infectious Diseases.—Man's resistance to infection depends on many factors. Mechanical barriers aid in preventing the entrance of micro-organisms into susceptible tissues and also in localizing infections. These include the epithelial coverings such as the skin, the gastrointestinal tract mucosa, and the epithelium of the respiratory tract. Barriers within the body, such as the tendon sheaths, fascial planes, the blood-brain barrier, and serous membranes, all prevent in a mechanical way the spread of infection from one part of the body to another. Certain physiological processes act in a mechanical manner to prevent infection. These include tear secretion and flow of saliva and urine, or the formation and movement of the mucus sheath of the respiratory tract and of the mucus secretions of the other parts of the viscera. The various body fluids, such as blood plasma and gastric juice, exercise antimicrobial actions against certain parasites. Such actions are frequently associated with the immune state of the host. The phagocytic cells play a most important role in the defense of the body against bacteria, protozoa, and probably viruses. Age, heredity, congenital influences, nutrition, fatigue, temperature, and concurrent disease are general factors that play a part in resistance against disease. Nungester stresses that all possible approaches must be employed in the battle against infections. To attack the problem from only one angle, for example biochemistry, however important it may be, is not adequate. Teamwork is required to contribute significantly to man's success in his battle against infectious diseases.

Blood, New York

6:867-962 (Oct.) 1951

Hematologic Manifestations of Vitamin B_{12} Deficiency in Swine. G. E. Cartwright, B. Tatting, J. Robinson and others.—p. 867.
Quantitative Analysis of Normal and Four Alternative Degrees of Inherited Macrocytic Anemia in House Mouse: I. Number and Size of Erythrocytes. E. S. Russell and E. L. Fondal.—p. 892.
Nucleic Acids of Rabbit Reticulocytes. N. S. Burt, R. G. E. Murray and R. J. Rossiter.—p. 906.
Role of Lungs in Removal of Transfused Lymphocytes. A. S. Weisberger, R. A. Guyton, R. W. Heinle and J. P. Storaasli.—p. 916.
Effect of Intravenous Histamine Administration on Level of White Blood Count in Peripheral Blood. H. R. Bierman, K. H. Kelly, N. L. Petrakis and others.—p. 926.
Paroxysmal Nocturnal Hemoglobinuria: With Two New Case Reports. S. K. McIlvanie and M. F. Beard.—p. 936.
Activity of Megakaryocytes in Postoperative State. A. A. Kerhulas, R. L. Ohler, R. Warren and J. S. Belko.—p. 945.
Surrounding Membrane of Granulations of Neutrophil and Its Acid Alcohol Fastness. P. Seabra.—p. 949.

Bulletin of New York Academy of Medicine, New York

27:597-640 (Oct.) 1951

Structure and Functions of New York Academy of Medicine. H. R. Craig.—p. 597.
Ewing: Experimental Method and Cancer Problem. C. P. Rhoads.—p. 606.
Freud: Man and Scientist. R. M. Loewenstein.—p. 623.

Endocrinology, Springfield, Ill.

49:149-288 (Aug.) 1951. **Partial Index**

Biological Activity of Steroids as Determined by Assay of Renin-Substrate (Hypertensinogen). O. M. Helmer and R. S. Griffith.—p. 154.
Effect of Pituitary Stalk-Section on Reproductive Organs of Female Rats. R. O. Greep and R. J. Barrnett.—p. 172.
Studies on Role of Adrenal in Anaphylaxis and Histamine-Shock. F. J. Saunders.—p. 185.
Action of Human Chorionic Gonadotrophin upon Metabolism of Phosphorus in Thymus of Hypophysectomized Immature Rats. U. Borell and E. Diczfalusy.—p. 189.
Prevention by Somatotrophin of Catabolism Which Normally Occurs During Stress. H. Selye.—p. 197.
Inhibition of Gametokinetic Response in Male "Rana Pipiens" with Adrenolytic Drugs. S. L. Clark, R. B. Greenblatt and R. M. West. —p. 200.
Gonadal Influences on Survival After Adrenalectomy in Golden Hamster. J. G. Snyder and L. C. Wyman.—p. 205.
Systemic Levels of Plasma Progesterone During Pregnancy in Women and Monkeys. T. R. Forbes.—p. 218.
Site of Thyrotrophin and Gonadotrophin Production in Rat Pituitary Studied by McManus-Hotchkiss Staining for Glycoprotein. H. D. Purves and W. E. Griesbach.—p. 244.
Histochemical Demonstration of Ketosteroids in Normal and Neoplastic Testes. R. Ashbel, R. B. Cohen and A. M. Seligman.—p. 265.

Florida Medical Association Journal, Jacksonville

38:151-224 (Sept.) 1951

Endocrine Relationships in Diabetes Mellitus and Carbohydrate Metabolism. S. Davidson.—p. 167.
Survey of Progress in General Field of Health in Florida for Period from 1940 to 1949. W. T. Sowder.—p. 171.
Stevens-Johnson Disease: Report of Case. R. R. Duke.—p. 176.

38:225-304 (Oct.) 1951

*Melanoma and Carcinoid of Rectum. C. Rosser.—p. 247.
Problems of Medical Care in Poliomyelitis. K. S. Landauer.—p. 252.
Antibiotics in Treatment of Urinary Tract Infections. G. Carroll and R. V. Brennan.—p. 257.
Safeguarding the Part Time Florida Patient. A. E. Murphy.—p. 259.
Use of Intra-Arterial Aminophylline for Peripheral Arteriosclerosis. J. A. Rickles.—p. 263.
Consolidated Screening Survey in Seminole County. M. J. Ford.—p. 265.
The Greeks Had a Word For It. G. A. Dame.—p. 268.

Melanoma and Carcinoid of Rectum.—The discussion of melanoma and carcinoid of the rectum is combined for the following reasons: both tumors are believed to arise from embryologic neural cells; both have a characteristic color, black in the case of malignant melanoma and yellow in carcinoid; neither has been understood well enough for general agreement concerning even the nomenclature; and both are surgical problems. Because no early specific or localizing symptoms occur with either tumor, melanomas in a malignant phase or carcinoids that are malignant per se are recognized almost invariably after metastasis, which occurs through the lymph or blood channels and may involve any part of the body. As information concerning these two neoplasms has increased, the terms used to designate them have been discarded or revised constantly. In Bacon's most recent text, for example, the tumor now known generally as melanoma is referred to as melanosarcoma, melanoepithelioma, malignant melanoma, and melanoblastoma. There is general dissatisfaction with Oberndorfer's term "carcinoid" for a tumor which, while benign in the appendix and on occasion in the remainder of the bowel, has violent carcinoma-like potentialities. There is a trend to adopt Masson's alternate designation, "neurocrine tumors," instead of carcinoid. The efficacy of roentgen rays has been disproved in melanoma and is unproved in carcinoid. Radical surgery is justified before metastases have occurred. The author reports two of his own cases.

Journal of Bacteriology, Baltimore

62:253-354 (Sept.) 1951. **Partial Index**

Studies on Specificity of Fermentation of Pentoses by Lactobacillus Pentosus. J. O. Lampen and H. R. Peterjohn.—p. 281.
Studies on Lysogenesis: I. Mode of Phage Liberation by Lysogenic Escherichia Coli. G. Bertani.—p. 293.
Mutual Exclusion Between Infecting Phage and Carried Phage. J. J. Weigle and M. Delbrück.—p. 301.
Arithmetic Linear Growth of Mycobacterium Tuberculosis Var. Hominis. M. W. Fisher, W. F. Kirchheimer and A. R. Hess.—p. 319.
Biochemical Studies on Phenomenon of Virus Reproduction. J. Spizizen, J. C. Kenney and B. Hampil.—p. 323.
Further Mineral Requirements of Streptococcus Faecalis. R. A. MacLeod. —p. 337.

Journal of Immunology, Baltimore

67:173-242 (Sept.) 1951

Experimental Streptococcal Pneumonia: I. Pathologic and Bacteriologic Features of Untreated Disease. L. Weinstein, C. G. Colburn, R. Seltser and others.—p. 173.
Id.: II. Effect of Penicillin Therapy on Pathologic and Bacteriologic Features. L. Weinstein, C. G. Colburn, R. Seltser and G. K. Mallory. —p. 183.
Id.: III. Anatomical Lesions Produced by Injection of Dead Streptococci into Lung. L. Weinstein, C. G. Colburn, R. Seltser and G. K. Mallory. —p. 189.
Antigenicity of Sarcomata Undergoing Atrophy in Rats. M. R. Lewis and P. M. Aptekman.—p. 193.
Studies on Herpes Simplex Virus: II. Soluble Antigen of Herpes Virus Possessing Skin-Reactive Properties. E. Jawetz, V. Coleman and M. F. Allende.—p. 197.
Effect of Calcium Hydroxide-Calcium Aluminate Antibody Purification Procedure on Physical Properties of Rabbit Gamma Globulin. L. A. Sternberger and M. L. Petermann.—p. 207.
Immunity Following Oral Administration of Poliomyelitis Virus to Monkeys. J. L. Melnick and N. Ledinko.—p. 213.
Differences in Degree of Infectiousness of Two Related Strains of Poliomyelitis Virus Following Their Oral Administration to Monkeys. J. L. Melnick.—p. 219.
Resistance of Mice to Myositis and Central Nervous System Infection Following Immunization with GDVII Mouse Encephalomyelitis Virus. R. Rustigian, A. M. Pappenheimer and T. LeBlanc.—p. 225.
Purification of Tetanus Toxoid by Ammonium Sulfate Fractionation. L. Levine and J. L. Stone.—p. 235.

Journal of International College of Surgeons, Chicago

16:265-384 (Sept.) 1951

*Carcinoid Tumors of the Rectum. M. C. Tavenner, H. E. Bacon and A. R. Peale.—p. 265.
Surgical Contrast Visualization of Pancreatic Ducts. L. Leger.—p. 285.
*Surgical Arteriovenous Fistula Between Right Common Carotid Artery and Internal Jugular Vein. J. M. Hammer, H. S. Heersma and others. —p. 289.
Operative Treatment of Osteoarthritis of Hip-Joint. G. Chapchal.—p. 309.
Suprapubic Prostatectomy. H. L. Vaidya.—p. 318.
Intestinal Obstruction Due to Gallstones. W. A. Calihan and H. F. Hulbert.—p. 325.
Surgical Lesions of Adult Type in Young Persons. W. C. Simpson. —p. 334.
Acute Pancreatitis. L. A. Fallis.—p. 337.
Accurate Femoral Length Determination. W. J. Lehman.—p. 342.
Refrigeration in Medicine and Surgery. J. C. Doane and H. D. Stein. —p. 346.
Primary Retroperitoneal Teratoma. J. Michalany, E. F. Navarro and V. A. Filho.—p. 350.
Sulfhydryl in Tissue Respiration and Repair as Applied to Burns in Ophthalmology. A. E. Cruthirds.—p. 356.
Hysterectomies in Private Practice. H. G. Wallace.—p. 365.
Diaphragmatic Hiatus Hernia: Repair by Abdominal or Transthoracic Approach. J. N. O'Neill.—p. 374.
Treatment of Perforated Gastroduodenal Ulcer. J. Eberle.—p. 379.
Indications for Use of Scalp Forceps. H. Zacherl.—p. 382.

Carcinoid Tumors of the Rectum.—The authors report seven cases of carcinoid tumors of the rectum discovered by proctosigmoidscopic examination in patients with or without symptoms of anorectal disease. In one of these patients the lesion was associated with metastases to the liver and other abdominal viscera. Of the 78 cases so far recorded in which the lesions were located in the rectum, there have been metastases in 8 (10.2%). This is the lowest incidence of metastases for any group of carcinoids, except the appendical group. Carcinoid tumors are now regarded as malignant but usually slow-growing. They occur most frequently in persons over 40, except in the appendix, where the average age at the time of removal is 25. Patients with metastases are usually between 50 and 70. Carcinoids may arise anywhere in the gastrointestinal tract from small, eosinophilic, and sometimes argentaffin, epithelial cells located in the depths of the crypts of Lieberkuhn. In the tumor these cells group themselves into nests, cords, rosettes, or pseudoglands. Grossly, the rectal carcinoid, frequently found on the anterior wall of the rectum, is usually small (0.5 to 1.5 cm. in diameter), firm, nontender, and sessile, although some are polypoid. It is mobile, and the mucosa slides over it readily. Multiple tumors are sometimes found. Larger tumors may be fixed, ulcerating, and annular. The smaller tumors are asymptomatic, but the larger may give rise to bleeding and obstruction. Carcinoids are frequently confused grossly and microscopically with carcinoma. Biopsy is mandatory. Treatment consists of wide excision of the smaller nodules and radical resection of large multiple or recurrent lesions. Patients should be examined periodically for recurrences or multiple foci. The authors stress that lesions such as this can be discovered early only by routine proctosigmoidoscopy in all patients undergoing physical examination.

Surgical Arteriovenous Fistula.—A fistula was created between the right common carotid artery and the internal jugular vein in 10 children with cerebral palsy, and in 23 adults with residual hemiplegia, aphasia, or convulsive disorders following cerebrovascular accidents. The fistulas were established for the purpose of reversing the blood flow through the jugular vein and increasing the blood supply to the brain. It was hoped that by this means the function of viable but dormant neurones could be restored. The operative mortality was 6% in the adult group, but there were no deaths among the children in the immediate postoperative period. Postoperatively there was objective improvement in 18% of the children and in 22% of the adults. It was demonstrated angiographically that in those who showed no improvement the blood was not being shunted up to the cortex. Instead, owing to anatomic variations in the veins, it was being shunted (1) across the confluence of the sinuses to the transverse and sigmoid sinuses on the opposite side, (2) into the inferior sagittal or inferior petrosal sinuses, or (3) into the collateral or emissary veins. Such shunting increased the load on the right side of the heart or produced dilatation of the veins of the scalp, neck, or orbit. To prevent these complications and to eliminate the 80% of cases in which no improvement can be expected from this operation, the authors recommend the performance of a retrograde angiogram through the right internal jugular vein before operation is considered. They also point out that, if the fistula is made too small, it will close off spontaneously within the first few days, whereas, if it is made too large (over 3 to 4 mm. in diameter), signs of increased intracranial pressure, including headache, vomiting, and coma, may develop. Certain changes produced in the Queckenstedt test by the cervical arteriovenous fistula suggest that the test may be a useful diagnostic aid in cases of suspected intracranial arteriovenous communication.

Journal of Neurosurgery, Springfield, Ill.

8:459-546 (Sept.) 1951

*Brain Tumors Simulating Meningitis. I. A. Brown and W. T. Peyton. —p. 459.
*Electromyographic Observations on Postoperative Disc Patient. E. W. Mack.—p. 469.
Postoperative Survival of Patients with Intracranial Oligodendroglioma with Special Reference to Radical Tumor Removal: Study of 26 Patients. G. Horrax and W. Q. Wu.—p. 473.
Morgagni's Syndrome and Brain Tumors: Note. S. Moore.—p. 480.
Compression of Spinal Cord by Osteitis Deformans (Paget's Disease), Giant-Cell Tumor and Polyostotic Fibrous Dysplasia (Albright's Syndrome) of Vertebrae: Report of Four Cases. P. Teng, S. W. Gross and C. M. Newman.—p. 482.
Danger of Air Embolism When Removing Meningiomas Arising Along Superior Sagittal or Longitudinal Sinus: Method of Prevention. F. L. Reichert.—p. 494.
Treatment of Bullous Keratitis by Greater Superficial Petrosal Neurectomy. W. A. Nosik and L. V. Johnson.—p. 498.
Lumbar and Sacral Cysts Causing Pain. F. Schreiber and B. Haddad. —p. 504.
Notes on Series of Brain Tumors. F. C. Grant and M. P. Sayers.—p. 510.
Tumor of Glomus Jugulare with Extension into Middle Ear (Nonchromaffin Paraganglioma or Carotid-Body-Type Tumor). E. Alexander Jr., P. R. Beamer and J. O. Williams.—p. 515.

Brain Tumors Simulating Meningitis. — Many patients with symptoms of meningeal involvement are subjected to intensive doses of various chemotherapeutic agents, and in many cases little further attempt is made to trace the etiology of the involvement. In meningitis due to bacterial organisms this procedure may be successful, but, because there are cases of meningeal irritation not infectious in origin, failure to investigate a patient thoroughly at the onset for the specific cause of the involvement may result in the neglect of a neurological condition that cannot respond to chemotherapy. The cases reported here emphasize this point, since all three patients had brain tumors which presented as meningitis. The first patient had a large dermoid cyst of the frontal lobes. Contents of dermoid and epidermoid cysts of the brain are irritating to the ependymal lining. In the second patient, the signs of meningeal irritation and the high proportion of polymorphonuclear leukocytes in the spinal fluid suggested

primary meningitis. The failure to respond to antibiotics and the abnormal course prompted further investigation, which led to the diagnosis of glioblastoma multiforme of the frontal lobes. The meningeal reaction was probably due to tumor necrosis and hemoglobin breakdown. Myelin destruction may also have contributed to the meningitic response. The third patient had a cerebral varix involving the third ventricle. The meningeal reaction and spinal fluid pleocytosis are assumed to have been due to the breakdown products of hemoglobin. Hydrocephalus was the cause of death. The authors conclude that intracranial neoplasms are to be accorded an important place in the etiology of meningitis. Any meningitis with an abnormal course should be viewed with suspicion and studied to determine the etiology.

Electromyographic Observations After Removal of Intervertebral Disk.—Electromyographic studies of the sacrospinalis muscles in patients complaining of low back pain following operative removal of a herniated intervertebral disk in the lumbar region yielded evidence of segmental denervation. This report concerns 18 patients who had postoperative back pain and who were subjected to electromyographic study. This number included six patients with sacrospinalis denervation associated with severe lower back pain. Evidence of reinnervation of the previously denervated muscle groups was observed from 115 to 293 days postoperatively. In all cases the improvement or cessation of pain paralleled the improvement in the electromyographic recordings, indicating a return of innervation to the involved muscle segments. The author calls attention to the likelihood of a stretch injury of the posterior division of the spinal nerve root as a cause for this denervation. It is probable that the use of self-retaining retractors may cause an ischemic block resulting in some localized denervation.

Journal of Nutrition, Philadelphia

45:1-164 (Sept.) 1951. **Partial Index**

Claude Bernard: Biography. J. Mayer.—p. 3.
Raw Versus Processed Corn in Niacin-Deficient Diets. J. Laguna and K. J. Carpenter.—p. 21.
Effect of Kind and Level of Protein in Diet on Production of Soft and Skeletal Tissues. M. D. Doyle and T. E. Porter.—p. 29.
Interrelation of Pteroylglutamic Acid, Vitamin B_{12} and Monkey Anti-Anemia Factor. S. C. Smith and C. A. Elvehjem.—p. 47.
Nutritive Effect of Heating Lactalbumin in Presence of Various Reducing Sugars. L. J. Schroeder, R. A. Stewart and A. H. Smith.—p. 61.
Further Studies on Amino Acid Imbalance Produced by Gelatin in Rats on Niacin-Tryptophan Low Ration. R. L. Lyman and C. A. Elvehjem.—p. 101.
Nitrogen Loss in Feces: Variability of Excretion in Normal Subjects on Constant Dietary Intakes. V. Toscani and G. D. Whedon.—p. 119.
*Effects of Certain Antibiotics on Growth of Rats Fed Diets Limiting in Thiamine, Riboflavin, or Pantothenic Acid. Hwa Lih and C. A. Baumann.—p. 143.
Effect of Diet on Maze Learning in Second-Generation Rats: Folic Acid Deficiency. J. R. Whitley, B. L. O'Dell and A. G. Hogan.—p. 153.

Antibiotics and B Vitamins.—This report concerns the effects of antibiotics on the growth of rats receiving limited amounts of thiamine, riboflavin, or pantothenic acid. Groups of five weanling male rats were fed diets deficient in one of these vitamins and, as in a bioassay, graded doses of the vitamin were then given. Some groups also received aureomycin, streptomycin, penicillin, terramycin, chloramphenicol (chloromycetin®), 3-nitro-4-hydroxyphenyl arsonic acid, or sulfasuxidine in the basic ration. The antibiotics were most effective in diets that contained enough vitamin for half of maximum growth, and the growth responses due to the antibiotics were approximately equal to those observed when the vitamin content of the diet was doubled in the absence of antibiotics. The relative effectiveness of the antibiotics varied with the particular vitamin deficiency. In thiamine deficiency penicillin produced the greatest increases in growth; aureomycin and streptomycin produced definite but lesser increases; while chloramphenicol, terramycin, and 3-nitro-4-hydroxyphenyl arsonic acid were inactive, and sulfasuxidine exerted a delayed effect. In riboflavin deficiency penicillin and aureomycin were equally effective; some stimulation was noted with streptomycin, chloramphenicol, and terramycin in the presence of a moderate level of riboflavin; 3-nitro-4-hydroxyphenyl arsonic acid and sulfasuxidine appeared to be inactive. In pantothenic acid deficiency aureomycin and streptomycin were most effective, while penicillin was less active.

Medicine, Baltimore

30:197-282 (Sept.) 1951

Effects of Changes in Altitude on Hematopoietic Activity. R. L. Huff, J. H. Lawrence, W. E. Siri and others.—p. 197.
Periodic Disease. H. A. Reimann.—p. 219.
Amebic Brain Abscess: Review of Literature and Report of Five Additional Cases. J. A. Orbison, N. Reeves, C. L. Leedham and J. M. Blumberg.—p. 247.

Michigan State Medical Society Journal, Lansing

50:969-1088 (Sept.) 1951. **Partial Index**

Arthritis Research in Michigan-II. J. J. Lightbody.—p. 1006.
The Impostor—Arthritis of Spine. W. H. Blodgett.—p. 1008.
*Sustained Pituitary Adrenocorticotropic Hormone (ACTH). E. A. Peterman.—p. 1010.
*Cortisone in Rheumatoid Arthritis: Interval Report. A. E. Price, J. J. Lightbody, W. S. Reveno and E. C. Vonder Heide.—p. 1015.
Probability That Increased Secretion of Oxysteroids Does Not Fully Explain Improvement in Certain Systemic Diseases During Pregnancy. W. Q. Wolfson, W. D. Robinson and I. F. Duff.—p. 1019.
Errors and Pitfalls in Diagnosis and Treatment of Rheumatic Diseases. E. Lipkin.—p. 1022.
Treatment of Still's Disease with Cortisone and Gold. J. D. Chase and J. M. Wilkinson.—p. 1026.
Studies on Removal of Protein from Chondroitin Sulfate. S. Levey and S. Sheinfeld.—p. 1028.
Physical Medicine and Rehabilitation: Application to Chronic Arthritis. M. K. Newman and A. Murphy.—p. 1031.
Oral Cortisone. M. Dale.—p. 1035.
ACTH and Cortisone in Treatment of Shoulder-Hand Syndrome. J. W. Sigler and D. C. Ensign.—p. 1038.
Etiology of Pain in Degenerative Joint Disease. F. X. Krynicki.—p. 1045.
Levels of Plasma Beta-Glucuronidase in Rheumatoid Arthritis. D. H. Basinski, B. P. Smith, Hsien-gieh Sie and H. A. Freund.—p. 1048.
Your Government and You. C. Morris.—p. 1051.
Treatment of Trichonomas Vaginalis Vaginitis. R. B. Kennedy.—p. 1053.

Sustained Corticotropin.—Intramuscular injections of corticotropin (ACTH) suspended in 5 cc. of a sustaining menstruum consisting of 18% nonantigenic gelatin made hypertonic with 8% dextrose were given daily to 24 patients with rheumatoid arthritis. They were treated for 17 to 43 days, the total dose of the drug varying from 280 to 1,705 mg. Serial circulating eosinophil counts showed the maximum physiological effect from a single injection to be reached within 5 to 12 hours. The effect was well maintained from 12 to 24 hours, gradually diminishing from 24 to 48 hours. As each succeeding daily injection of the drug was given before the effect of the preceding one was gone, a mild continuous adrenal cortical stimulation was obtained. Adequate clinical response was maintained with approximately 60% less corticotropin than was formerly required by the frequent and rapidly absorbed aqueous injections. Chronically ill patients, in whom corticotropin was formerly thought to be contraindicated, responded satisfactorily to this treatment. Of 532 injections given to the 24 patients, only two instances of a general reaction were observed. Mild chills and fever followed by moderately profuse perspiration occurred eight hours after the sixth injection of 40 mg. of sustained corticotropin and approximately 10 hours after the second injection of 40 mg. of sustained corticotropin respectively. With no interruption in treatment of both patients, the daily amount of sustained corticotropin was decreased from 40 to 20 mg. in the standard amount of menstruum and no further untoward symptoms occurred. The so-called "rebound" symptoms, which often occur after a single injection of corticotropin in aqueous solution, did not appear at any time. The method of continuously sustaining the physiological action of corticotropin lends itself well to ordinary office procedure. The majority of patients do not need to be hospitalized, and the difficulties observed with home treatment are eliminated.

Cortisone in Rheumatoid Arthritis.—Sixty-three patients, 26 men and 37 women, between the ages of 19 and 70, with rheumatoid arthritis of from 4 months' to 36 years' duration were treated with cortisone. Except for a few cases, the dosage of the drug consisted of an initial intramuscular injection of 300 mg. followed by 100 mg. daily for two weeks. The dosage was then reduced to 100 mg. on alternate days for from one to three weeks. Thereafter, an attempt was made to maintain the patient on 150 mg. twice weekly, but many patients required injections three times a week, and for these the individual dosage varied from 75 to 150 mg. After the advent of cortisone acetate tablets

for oral use, all patients were transferred to this preparation, the initial dose varying from three to four tablets a day for several days, followed by a maintenance dose of one tablet (25 mg.) twice, and in some three times daily. The duration of treatment varied from 3 to 14 months. All patients throughout the course of cortisone treatment were placed on a diet having a salt content that did not exceed 1 gm. Physical therapy was used as an adjunct during the two-week period of hospitalization. Of the 63 patients treated, 37 were considered to have obtained good results and 21 fair results; treatment failed in 5 patients. The age of the patient appeared to have some bearing on the end result. The 15 patients in the first three decades of life had the highest percentage of good results (80%). After the third decade the incidence of good results became progressively smaller. The influence of sex on the outcome of cortisone therapy was insignificant. Supplementary treatment with sex hormones, tetraethylammonium chloride (etamon®), vitamin C, and gold, in combination with cortisone, was of little help. Side-effects, such as euphoria, psychosis, hirsutism, moon face, and edema of the extremities, occurred in a small number of patients. In all instances these complications subsided after cortisone treatment was stopped. To obtain the most satisfactory results it is essential for cortisone to be administered continuously and in adequate dosage.

Missouri State Medical Assn. Journal, St. Louis

48:751-844 (Oct.) 1951

CIVIL DEFENSE

Why Civil Defense? C. P. Hungate.—p. 768.
Civil Defense Needs Every Physician. E. F. Stegen.—p. 771.
State Level Civil Defense, Health and Medical Services and Special Weapons Defense. B. G. Hamilton and H. S. Miller.—p. 775.
Role of Red Cross in Civil Defense. M. Tainter.—p. 776.
Plan for Medical Service in Missouri's Civil Defense Program. C. H. Lohr.—p. 779.
Personnel Requirements of Medical Portion of State Civil Defense Plan. D. G. Hall.—p. 800.
Functions of General Staff Section on Plans and Training (D-3). S. J. Merenda.—p. 800.
Function of Intelligence (G-2) Section. W. J. Shaw.—p. 801.
Supply and Logistics. J. Growdon.—p. 802.
Blood Program. H. N. Allen.—p. 805.
Radiologic Warfare Defense. J. E. Schiffmacher.—p. 806.
Biologic Warfare: National Civil Defense Administration.—p. 810.
Public Health Activities in Civil Defense. C. F. Blankenship.—p. 813.
Medical Plans for Civil Defense in Nontarget Area. S. A. Grantham. —p. 817.
Medical Public Information. J. D. Bennett.—p. 818.
Time for Decision. C. P. Hungate.—p. 821.

Nebraska State Medical Journal, Lincoln

36:313-344 (Oct.) 1951

Recognition and Management of Bronchiectasis. R. H. Overholt.—p. 315.
The Physician and the Dentist. A. Dunn.—p. 322.
High Cost of Drugs for Recipients of Old Age Assistance: Report of Maternal and Child Health Committee. R. E. Garlinghouse.—p. 323.
Orthopaedic Care of Compound Fractures. H. F. Johnson and F. D. Sundstrom.—p. 327.
The Physician's Opportunities and Responsibilities in School Health Service. H. M. Jahr.—p. 329.
The Complaint of the Patient. E. E. Houfek and R. H. Young.—p. 331.
Amoebiasis in Nebraska. G. W. Kelly and L. O. Vose.—p. 334.

New England Journal of Medicine, Boston

245:389-440 (Sept. 13) 1951

*Some Questions About Bronchiogenic Carcinoma. E. A. Graham.—p. 389.
Genesis of Coronary Sclerosis. T. Leary.—p. 397.
*Retrolental Fibroplasia: Statistical Study with Particular Reference to Effect of Vitamin A. J. Dancis, J. M. Lewis and L. P. Guy.—p. 402.
Wool As Cause of Eczema in Children. L. W. Hill.—p. 407.
Blood Grouping, Blood Banking and Blood Transfusion (Continued). L. Soutter, F. H. Allen Jr. and C. P. Emerson Jr.—p. 410.

Bronchiogenic Carcinoma.—In recent years an enormous increase has occurred in the incidence of bronchiogenic carcinoma throughout the western world. In the United States the increase in incidence was almost eightfold in the 21 years between 1914 and 1935. Judging from more recent vital statistics available in other countries, one may assume that the incidence since 1935 has increased still further. Although bronchiogenic carcinoma is a disease that affects men oftener than women, the disparity cannot be explained by inherent sex differences. The author's own statistical studies and those carried out by Doll and Hill in Great Britain indicate strongly that cigarette smoking is at least one important factor in the etiology of most cases of bronchiogenic carcinoma. Epidermoid (squamous) carcinoma and adenocarcinoma are the two main types of bronchiogenic carcinoma. Other types have been named, but most of them are probably variants of the two main types mentioned. The epidermoid carcinoma and its undifferentiated variant are the types that have shown the greatest increase in incidence. Also, it is this variety that is most prevalent in men and that is most commonly observed in heavy smokers. On the contrary, the adenocarcinoma has apparently not shown much increase and is about equally divided between the two sexes and has a high relative incidence in nonsmokers. It seems probable, therefore, that the cigarette cancer is the epidermoid variety and that this is essentially different from the adenocarcinoma in pathogenesis. It is suggested that the two main types of bronchiogenic carcinoma arise in response to different carcinogenic agents. One remarkable and so far unexplained peculiarity about bronchiogenic carcinoma is the fact that at necropsy metastases were observed to the adrenal glands in a large percentage of cases. Any satisfactory conclusion on the effectiveness of lobectomy as contrasted with pneumonectomy in obtaining a five-year survival may be formed only when much larger series of comparative results may be available. More use should be made of preoperative tests of respiratory function in order to determine the advisability of total pneumonectomy.

Retrolental Fibroplasia.—The incidence of retrolental fibroplasia among premature infants was investigated at Bellevue Hospital, New York, during the period of November, 1946, to October, 1950. Between November, 1946, and March, 1948, a water-miscible vitamin-D preparation was used routinely in the feeding of premature infants. During this period the incidence of retrolental fibroplasia was extremely low. Beginning in March, 1948, a water-miscible multivitamin preparation containing vitamin A was substituted for the vitamin D. The incidence of retrolental fibroplasia remained unchanged until May, 1949. This persistently low incidence for over a year makes it very unlikely that the vitamin-A preparation is a factor in the production of retrolental fibroplasia. Since May, 1949, the incidence of retrolental fibroplasia has been rising, despite the fact that practices concerning transfusions, supplementary iron, exposure to light, and the initial starvation period remained unchanged. As the incidence rose, the infants with higher birth weights became involved, which was in contrast to previous experience that the incidence of retrolental fibroplasia varies inversely with the birth weight. This suggests that as the agent that produces retrolental fibroplasia becomes more prevalent, it also becomes more potent. For the last eight months vitamin D alone was used again as a substitute for the water-miscible multivitamin preparation containing vitamin A, and the incidence of retrolental fibroplasia appears to be remaining high, although, since a complete six-month follow-up of a sufficient number of infants has not been made, no definite statement is possible.

New York State Journal of Medicine, New York

51:1995-2054 (Sept. 1) (Part I) 1951

Atopic Dermatitis: Some Aspects and Considerations. J. Wolf.—p. 1995.
Application of Simple Minor Surgical Technics to Dermatologic Practice. D. Torre and G. M. Lewis.—p. 2000.
Industrial Dermatoses and Law: Suggestions for Improvement. E. F. Traub and D. Schultheis Jr.—p. 2005.
Ionizing Radiations in Dermatologic Practice. A. C. Cipollaro and A. Brodey.—p. 2011.
*Problem of Consecutive, Complicating Eruptions in Industrial Medicine. G. F. Emerson.—p. 2015.
Cortisone in Treatment of Cutaneous Diseases. M. J. Costello.—p. 2017.
Malignant Melanomas of Skin. F. D. Weidman.—p. 2022.
Nummular Eczema as Clinical Entity. P. Gross.—p. 2025.
Anaplastic Epithelioma Developing in Acrodermatitis Chronica Atrophicans. W. Sachs and A. W. Young.—p. 2028.
Infantile Cortical Hyperostosis. R. I. Jaslow and C. F. Friedman. —p. 2031.

Consecutive, Complicating Eruption and Compensation.—In one of the two cases reported here, a woman was exposed to chemicals used in electroplating, which apparently frequently wet her hands and forearms. After one month at this work, dermatitis appeared on the exposed parts, and later the face and neck be-

came involved. Since that time (1944) she has been under the care of dermatologists and general practitioners for varying intervals of time. The dermatosis has persisted and is worse during the summer heat. This patient and another, who suffered a welding burn in 1949, raise a number of questions concerning workmen's compensation. The author discusses such questions as whether such patients are entitled to free treatment of skin lesions for the rest of their lives and whether the employer in whose plant the original skin lesion was acquired is liable for later doctor, hospital, and medicine bills.

North Carolina Medical Journal, Winston-Salem

12:413-480 (Sept.) 1951

Jaundice. P. Thorek.—p. 413.
Dangers of Obscuring Serious Disease by Early Chemotherapeutic Treatment of Mild Symptoms. G. T. Harrell.—p. 417.
Intra-Uterine Fetal Death. D. C. Schweizer.—p. 421.
The Rh Factor and Erythroblastosis Fetalis. A. R. Cross.—p. 426.
New Intravenous Barbiturate in Obstetrics. M. H. Bertling and J. C. Burwell Jr.—p. 429.
Congenital Anomaly of Uterus as Cause of Abdominal Pregnancy: Case Report. P. E. Simpson.—p. 431.
*Gout in Young People. D. Flinchum and J. A. Powers.—p. 433.
Aureomycin and Its Use in Treatment of Chronic Osteomyelitis. J. L. Goldner and H. A. Gailey.—p. 436.
Has Malaria Disappeared? C. P. Stevick.—p. 438.

Gout in Young Persons.—The average age of onset of gout is 40 years, but in young persons it is frequently overlooked. The attacks may be infrequent, with no symptoms between exacerbations, and the disease may remain dormant and asymptomatic throughout life with hyperuricemia as the only sign. Gout may be present for several years before tophi can be demonstrated. Some patients will, on careful questioning, date their symptoms back to teen age. The three cases reported occurred in a boy 15 and two men of 25. The joints most commonly involved are, in order of frequency, the foot, hand, knee, elbow, shoulder, and hip. Emotional upsets, an operation, alcoholic excess, trauma, undue exercise, or physical exertion may initiate an episode of symptomatic gout. Attacks occur often in spring, and allergic phenomena are frequently noted in gouty persons. During an attack the blood uric acid level is usually over 6 mg. per 100 cc., but it may be within normal limits (2 to 4 mg.). There is no correlation between the uric acid content and clinical severity. Colchicine is specific therapy for gout, and a therapeutic trial with it is often indicated to establish the diagnosis. Salicylates are useful because of their analgesic effect and because they increase the excretion of uric acid. A low purine diet seems helpful. Cortisone or corticotropin (ACTH) usually gives prompt relief. Complete relief is usually obtained after one or two 100 mg. doses of cortisone. Colchicine can then be used to prevent symptoms.

Radiology, Syracuse, N. Y.

57:305-468 (Sept.) 1951

Value of Soft-Tissue Technic in Diagnosis and Treatment of Head and Neck Tumors. G. H. Fletcher and K. E. Matzinger.—p. 305.
Pericardial Celomic Cysts: Presentation of Five New Cases and Five Similar Cases Illustrating Difficulty of Diagnosis. J. C. Bates and F. Y. Leaver.—p. 330.
*Roentgen Diagnosis of Intrathoracic Lymph-Node Metastases in Carcinoma of Lung. J. J. McCort and L. L. Robbins.—p. 339.
Correlation of Postmortem Pathological Observations with Chest Roentgenograms. D. S. Beilin, J. P. Fink and L. W. Leslie.—p. 361.
Roentgen Diagnosis of Pericardial Effusion, with Special Reference to Appearance of Barium-Filled Esophagus and Cardiohepatic Angle. G. Levene and S. A. Kaufman.—p. 373.
Nitrogen Mustard as Adjunct to Radiation in Management of Bronchogenic Cancer. B. Roswit and G. Kaplan.—p. 384.
Cerebellopontine Angle Tumors: Their Roentgenologic Manifestations. P. J. Hodes, E. P. Pendergrass and J. M. Dennis.—p. 395.
Angiographic Demonstration of Anatomic Variation in Position of Transverse Dural Sinuses. B. S. Epstein.—p. 407.
Effect of Roentgen Radiation on Thyroid Function in Rats. J. B. Hursh, P. A. Van Valkenburg and J. B. Mohney.—p. 411.
Lethal Irradiation of Mice with High Doses of Roentgen and Gamma Rays. P. Bonét-Maury and F. Patti.—p. 419.

Roentgen Diagnosis of Lymph Node Metastases in Lung Carcinoma.—McCort and Robbins investigated the records of 221 surgically treated patients with carcinoma of the lung. Enlargement of regional lymph nodes was found during operation in 146, and laboratory examination showed carcinoma in the lymph nodes in 135 of these cases. Complete information on 103 of these patients was obtained. The authors found that carcinoma of the lung spreads mainly by the lymphatic system, and the regional lymph nodes are oftenest involved. Metastases to these nodes diminish the possibility of surgical cure, cause enlargement of these nodes, and often make them visible on roentgenograms. The mechanisms by which this occurs are as follows: 1. The enlarged nodes project into the lung and are visualized by virtue of their contrast with aerated lung. 2. They may alter the normal contours of the mediastinal structures. 3. They may displace the mediastinal structures. It has not been possible to determine a relationship between the segment of the lung involved by the primary tumor and the group of lymph nodes invaded by the metastases; however, when the primary tumor occurs in a given lobe, certain lymph node groups are more frequently involved than others. Recognition of the extent of the intrathoracic metastases will be of value in planning treatment.

Review of Gastroenterology, New York

18:617-692 (Sept.) 1951

Surgical Diseases of Esophagus. R. Nissen.—p. 629.
Studies on Factors Influencing Liver Injury and Repair. I. S. Ravdin and H. M. Vars.—p. 637.
Liver Biopsy. E. M. Rappaport.—p. 642.
Gastrointestinal Hormones. F. Hollander.—p. 651.
Utility of Ileocolostomy (Mikulicz-Type). B. J. Ficarra.—p. 656.
Proctologic Survey of Chronic Disease Hospital. S. D. Weston, I. Skir, N. L. Freund and others.—p. 660.
New Modification of Hemoglobin Technic for Determination of Pepsin in Gastric Juice Adapted for Wide Range of Values. G. B. J. Glass, B. L. Pugh and S. Wolf.—p. 670.

Rhode Island Medical Journal, Providence

34:405-452 (Aug.) 1951

Rehabilitation of the Hemiplegic. G. G. Deaver.—p. 421.
Significance of Gastric Ulcer and Cancer of Stomach. A. W. Allen.—p. 425.
Replacement of Femoral Head by Prosthesis. W. R. MacAusland.—p. 428.
The Palpable Liver: Its Relation to Liver Size and Mortality in Laennec's Cirrhosis. R. V. Lewis.—p. 430.
Surgical Fees. W. P. Davis.—p. 436.

34:453-512 (Sept.) 1951

Poliomyelitis. E. J. West and P. L. Mathieu Jr.—p. 469.
Present Status of Antibiotics and the Future in This Field. J. P. Gray.—p. 474.
Essays on Occupations: Surgery. J. Fallon.—p. 484.

Rocky Mountain Medical Journal, Denver

48:647-728 (Sept.) 1951

Office Gynecology. E. J. De Costa.—p. 670.
Metabolic Craniopathy. P. A. Draper.—p. 675.
One-Stage Resection of Pharyngo-Esophageal Diverticula. G. L. Wright and R. G. Rigby.—p. 679.
Carcinoma of Stomach. D. B. Shaw.—p. 684.

Science, Washington, D. C.

114:227-252 (Aug. 31) 1951. **Partial Index**

Thromboplastic Activity of Hyaluronate. S. K. Abul-Haj, J. Watson, J. F. Rinehart and E. W. Page.—p. 237.
*Subcutaneous Implantation of Cortisone Pellets in Rheumatoid Arthritis. E. Henderson, J. W. Gray, M. Weinberg and E. Z. Merrick.—p. 243.

Implantation of Cortisone Pellets in Rheumatoid Arthritis.—Experience with various steroids administered in the form of pellets implanted subcutaneously shows that excellent utilization is the rule. The effect of cortisone pellets was studied in patients with rheumatoid arthritis. Eight adult patients with typical rheumatoid arthritis of severe grade received subcutaneous implantations of 900 mg. cortisone in 12 pellets of 75 mg. each. In four of the cases no cortisone in any form had been given previously. Four patients had been receiving cortisone by daily intramuscular injection for varying periods of time prior to the implantation. Prompt clinical improvement of moderate degree followed the implantation and was sustained for two to four weeks, whereupon all the patients except one relapsed to their pretreatment condition. In the one patient who did not relapse it seemed probable that the disease had become temporarily quiescent from other causes. It is of interest that the pharmacological actions

of cortisone by pellet implantation are of much shorter duration (two to four weeks) in patients with intact adrenal cortices than is the case in Addison's disease (adrenal insufficiency) in which they remain effective for several months.

South Dakota J. Med. & Pharmacy, Sioux Falls

4:229-264 (Sept.) 1951

The Acute Abdomen. P. Thorek.—p. 229.
Helpful Points in Diagnosis and Treatment of Liver Disease. M. H. Stauffer.—p. 236.
Care of the Cardiac Patient Undergoing Surgical Treatment. R. D. Pruitt.—p. 244.

4:265-294 (Oct.) 1951

Hematuria. C. D. Creevy.—p. 265.
Early Diagnosis of Acute Abdomen. R. E. Greenfield.—p. 271.

Surgery, Gynecology and Obstetrics, Chicago

93:385-528 (Oct.) 1951

Acute Radiation Injuries in Man. L. H. Hempelmann.—p. 385.
Management of Vesicovaginal Fistula Following Abdominal Total Hysterectomy. H. C. Falk and I. A. Bunkin.—p. 404.
*Blood Transfusions. T. R. Talbot Jr.—p. 411.
*Radioactive Iodine as Adjunct to Surgical Management of Diseases of Thyroid. B. M. Dobyns.—p. 415.
Ten Year Surgical Results of Rectal Cancer. G. E. Binkley and M. W. Stearns Jr.—p. 428.
Partial or Complete Pelvic Exenteration for Extensive Irradiation Necrosis of Pelvic Viscera in the Female. A. Brunschwig.—p. 431.
Facet Synovial Impingement: New Concept in Etiology of Lumbar Vertebral Derangement. G. L. Kraft and D. H. Levinthal.—p. 439.
Balance of Life and Death in Cerebral Lesions. G. Jefferson.—p. 444.
Pregnancy Following Conservative Operation for Endometriosis. R. L. Haas.—p. 459.
Wound Healing: Technical Factors in Gain of Strength in Sutured Abdominal Wall Wounds in Rabbits. C. A. Nelson and C. Dennis.—p. 461.
Studies on Autonomic Blockade: V. Inhibition of Water Diuresis by High Spinal Anesthesia in the Pregnant Woman. N. S. Assali and J. G. Rosenkrantz.—p. 468.
Effect of Long and Short Afferent Loops in Gastrectomy upon Rate of Emptying of Gall Bladder in Experimental Animals. I. D. Baronofsky and D. Gaviser.—p. 479.
Carcinoid (Neurocrine) Tumors of Rectum. C. Rosser.—p. 486.
Use of Subclavian Artery in Surgical Treatment of Coarctation of Aorta. H. B. Shumacker Jr.—p. 491.

Blood Transfusions.—The ease with which clinicians can order and procure stored blood for transfusions has created a situation in which more transfusions are being given than is either wise or necessary. Many serious hazards make blood transfusion both potentially and actually a dangerous undertaking. In addition to the difficulties created by the Rh factor, a number of other hazards or disadvantages make it mandatory for the clinician to weigh the advantages of transfusions against the dangers or inadvisability of giving blood. These hazards are (1) depression of erythropoiesis, (2) homologous serum jaundice, (3) artificial polycythemia, (4) hemolytic transfusion reactions, and (5) pyrogenic transfusion reactions. The clinician should recognize these risks.

Radioactive Iodine in Diseases of Thyroid.—Much fundamental knowledge of the normal and pathological physiology of the thyroid has been acquired by the use of radioactive iodine in laboratory and clinical investigation. Radioactive iodine is useful in making a diagnosis of thyrotoxicosis. The functional capacity of thyroid nodules may be determined preoperatively, giving a clue to the possibility of encountering malignant disease or aiding in identification of hyperfunctioning nodule that may not yet be causing thyrotoxicosis. The preparation of radioautographs from thyroid nodules that have been removed affords an opportunity to correlate their functional capacity with their gross and microscopic appearance. These methods furnish a means for distinguishing between Graves' disease with an incidental nodule and thyrotoxicosis with a hyperfunctioning nodule. Severe thyrotoxicosis in patients who are poor surgical risks may be corrected by administration of radioactive iodine. Although radical surgery remains the primary method of treatment of carcinoma of the thyroid, radioactive iodine is of value in a few patients. Most success has been achieved in patients with the follicular type of adenocarcinoma. Complete removal of all normal thyroid tissue and the administration of thiouracil compounds may augment the uptake of radioactive iodine in some metastases from carcinomas of the thyroid.

Urologic & Cutaneous Review, West Palm Beach, Fla.

55:517-582 (Sept.) 1951

*Aortography and Renal Arteriography Following Percutaneous Retrograde Catheterization of Femoral Artery and Aorta. B. S. Abeshouse, I. Scherlis, M. Golden and M. Rubin.—p. 517.
Bilateral Renal Metastases from Carcinoma of Prostate: Case Report. E. J. Adlerman.—p. 528.
Rhabdomyosarcoma of Urinary Bladder in Children. J. Swinney.—p. 530.
Multiple Congenital Anomalies of Genito-Urinary Tract in Young Boy. P. G. Curbelo and J. Davila.—p. 532.
Lipid Redistribution in Human Spermatogenesis. R. L. Brown.—p. 534.
Selective, Chemical Epilation in Treatment of Tinea Capitis as Contrasted with Diffuse X-Ray Epilation. T. Benedek.—p. 539.
New Studies Experimental and Clinical on Pemphigus. D. I. Macht.—p. 550.
Modern Treatment of Vascular Nevi. J. M. Greenhouse.—p. 559.

Percutaneous Retrograde Aortography.—Arteriography of the aorta and its branches by means of percutaneous catheterization of the unexposed femoral artery with polyethylene catheters, using iodopyracet concentrated solution (70% diodrast®) or 80% sodium iodide as contrast medium, was performed 15 times on 13 patients. The chief value of aortography is that it provides new or additional information of the anatomic, pathological, and physiological aspects of renal disease not obtainable by any other diagnostic measure or even by surgical intervention. By correlating this information with the radiographic and physiological data obtained by retrograde pyelography and intravenous urography, the urologist can obtain a more accurate and precise picture of the renal disease in certain selected cases. Percutaneous retrograde arteriography should not be employed as a routine diagnostic procedure nor as a substitute for retrograde pyelography and intravenous urography. In the authors' cases diagnosis of renal neoplasm, aneurysm of the left renal artery, extensive suppurative process in the upper and middle portion of the kidney, large saccular aneurysm of the abdominal aorta, and arteriosclerosis of the renal arteries was established by percutaneous retrograde arteriography. Tortuosity of the arteries is usually pathognomonic of arteriosclerosis. The caliber of the arteries may be larger than normal in the presence of vascular occlusion, a solid neoplasm, or an acute inflammatory disease of the involved organ. A decrease in the caliber of the arteries is associated with sclerosis or calcification of the vessel walls or fibrosis and atrophy of the involved organ. The vascularity of a tumor considerably influences the arteriogram, as is readily seen in the case of renal or adrenal tumors. Compared with translumbar aortography and retrograde aortography by catheterization of the exposed femoral artery, percutaneous retrograde aortography has the distinct advantages of being a simple and safe procedure, easy to perform and attended by fewer complications and hazards.

West Virginia Medical Journal, Charleston

47:319-346 (Oct.) 1951

The Problems Facing American Medicine in the Immediate Future. J. W. Cline.—p. 319.
Cysts of Peripheral Retina in Relationship to Detachments. H. M. Katzin.—p. 325.
Ectromelia: Case Presentation. J. C. Arnett.—p. 328.
Rheumatic Fever. S. M. Jacobson.—p. 331.

Yale Journal of Biology and Medicine, New Haven

24:1-82 (Sept.) 1951

"Unitarian" View of Vaccinia Hemagglutinin. B. A. Briody.—p. 1.
Favism in Childhood: Case Report. D. E. Pickering and S. Hurwitz.—p. 5.
Studies on Metabolism of Human Cardiac Muscle Obtained by Auricular Appendectomy: Preliminary Report. W. J. Burdette.—p. 9.
Mortality Due to Rheumatic Heart Disease in Socio-Economic Districts of New Haven, Connecticut. R. W. Quinn and J. P. Quinn.—p. 15.
Daily Variations of Standing Potential Differences in Human Subjects: Preliminary Report. L. J. Ravitz.—p. 22.
Pheochromocytoma. D. B. Arst, W. J. Lahey and P. Kunkel.—p. 26.
Acetylcholine and Central Nervous System: Review of Neurochemical Mechanisms. R. A. Hughes and F. Robinson.—p. 35.
Interrelationships of Foodstuffs in Metabolism: Tentative Proposal. J. P. Peters.—p. 48.

FOREIGN

Arquivos Brasileiros de Cardiologia, São Paulo

4:249-362 (Sept.) 1951. **Partial Index**

*Roentgen Diagnosis of Coronary Calcification: Clinical Importance. N. Botelho Reis and E. Amorim.—p. 293.

Roentgen Diagnosis of Coronary Calcification.—Botelho Reis and Amorim describe roentgenologic methods for the diagnosis of calcification of the coronary arteries and the differential diagnosis of coronary calcification and the various types of cardiac and extracardiac calcification. The main roentgen features of coronary calcification are two parallel linear shadows or rosary shaped, nodular and annular shadows of the coronaries. The typical radioscopic shadows are passive and ellipsoid. They are restricted to the coronary region and are transmitted by the pulsations of the heart. The authors report four cases of calcification of coronary arteries in three men between the ages of 53 and 68 and in a woman 68. Both the right and the left coronary arteries were calcified in two patients. The calcification was observed during routine radioscopy with luminous screens. Three patients had had myocardial infarction that was confirmed by electrocardiograms. The infarction was calcified in one patient. The fourth patient had atypical anginal pain. The electrocardiogram did not show a typical myocardial infarct. In this case the radioscopic diagnosis of coronary calcification included that of the myocardial lesion. The authors emphasize the importance of radioscopy followed by roentgen examination of the heart and tomography in patients over 50 years of age with a history of coronary insufficiency for the roentgen diagnosis of coronary calcification. In these patients the roentgen demonstration of coronary calcification constitutes direct proof of coronary arteriosclerosis, with or without myocardial infarct.

British Medical Journal, London

2:689-746 (Sept. 22) 1951

Leptospirosis in England and Wales. J. C. Broom.—p. 689.
*Further Experiences with Prolonged Treatment of Rheumatoid Arthritis with A.C.T.H. and with Gold. J. Goslings, W. Hijmans, A. Querido and A. A. H. Kassenaar.—p. 698.
*B.C.G. Vaccination in the Newborn: Preliminary Report. W. Gaisford and M. Griffiths.—p. 702.
Pethidine as Adjuvant to Nitrous Oxide and Oxygen Anaesthesia. P. D. Johnson.—p. 705.
Post-Mortem Examinations on Air-Crash Victims. D. Teare.—p. 707.
Prozone Phenomenon in Haemagglutination Reactions with Special Reference to Quantitative Antiglobulin Test. P. O. Hubinont.—p. 708.
Injection Treatment of Hydroceles and Spermatoceles. J. A. Rhind.—p. 711.
Acute Subdural Haematoma in Infancy and Childhood. W. Fine and R. N. Herson.—p. 714.
Case of Hypersensitivity to Pethidine in a Woman in Labour. E. B. Butler.—p. 715.
Herpes Zoster with Involvement of Anterior Horn Cells. J. H. McIntyre.—p. 716.

Prolonged Use of Corticotropin in Rheumatoid Arthritis.—Of 20 patients with rheumatoid arthritis treated with corticotropin (ACTH) for one and one-half to eight months, 11 obtained a complete remission, 6 pronounced improvement, and 3 minor improvement. The total dose ranged from 1,150 to 6,570 mg. Follow-up for 1 to 14 months after discontinuation of the drug showed that relapses had occurred. Complete remission was maintained in only one patient, five continued to show pronounced improvement, four showed minor improvement, seven were no longer improved, and three had become worse. No correlation was observed between the severity of the disease and the results of treatment nor between the maintenance of improvement and the total amount of corticotropin administered. According to a previous report by the authors, the minimal effective amount of the drug in four patients was six doses of 2 mg. daily. In the 20 patients reported on, an initially adequate response failed both with low dosage and, in some patients, with continued high dosage, usually after four to eight weeks of treatment. Attempts to explain these failures were unsuccessful. The following possibilities were excluded by special study: masked corticogenic hypothyroidism, diminished response of the peripheral target organs to the cortisone-like substances produced by the adrenals under the influence of exogenous corticotropin, vitamin C deficiency, and decreased activity of the pituitary hormone preparations. Investigations of the possible development of neutralizing antibodies or a shift in the hormone production of the adrenals are indicated. Treatment of rheumatoid arthritis with corticotropin is still worthy of research. In a few cases the improvement obtained with corticotropin could be maintained by concomitant chrysotherapy.

BCG Vaccination in Newborn Infants.—This is a preliminary report on the results of BCG vaccination of 1,461 newborn infants during the first week of life. All vaccinations were made intradermally. A freeze-dried preparation made at the Pasteur Institute in Paris proved valuable, since its strength could be altered by varying the volume of water in which it is dissolved without increasing the total amount injected. The maximum dose of this preparation given was 0.375 mg. in 0.2 ml., the standard strength recommended being 0.1 mg. in 0.1 ml.; but the authors now recommend 0.2 mg. in 0.1 ml. as the routine dose. Of the 1,461 newborn infants vaccinated to date, 1,015 have completed their course and undergone Mantoux conversion. The shortest conversion time was 16 days. All those tested had undergone conversion within 10 weeks. Reactions to the vaccine were observed at the site of injection or in the lymph nodes draining the area of injection. No specific systemic reactions of any kind were observed. Enlarged lymph nodes, 1 to 5 mm. in diameter, were observed in the axilla in about half of the infants inoculated in the arm, and a similar enlargement was present in the inguinal lymph nodes of almost all of the infants inoculated in the thigh. Fluctuations or actual breaking down of a lymph node was seen 50 times, 47 times in the inguinal region and 3 times in the axilla. All these infants had received 0.2 ml. at a single site. This complication occurred so frequently that thigh injections were abandoned. When the standard dose of 0.1 ml. was injected only into the arms, no further complications occurred. It is both possible and practicable to immunize newborn infants with BCG. They react to 0.1 ml. of vaccine as do older children and adults. For routine immunization larger doses are unnecessary and are apt to produce complications. The time required for allergy to develop may be appreciably diminished by increasing the dose used. Although complications are not generally harmful, they are nevertheless undesirable, and the effort to secure a minimal conversion time should be restricted to selected infants for whose special circumstances the time factor is of great importance. In such circumstances complications may be prevented or minimized by giving the injections in divided doses at different sites.

Bruxelles-Médical, Brussels

31:1865-1904 (Sept. 9) 1951

*Some Remarks Concerning Etiology, Diagnosis, Prognosis, and Treatment of Primary Tuberculous Infection in Infants. V. Chevalier.—p. 1865.

Primary Tuberculous Infection in Infants.—This is a study on 65 children aged less than 2 years with primary tuberculous infection, usually with involvement of pulmonary lymph nodes. In contrast to observations made by other authors, the incidence of tuberculosis in the father of the infant was found to be much higher than that in the mother, except in the eight infants aged less than 6 months. Persons other than the infant's parents were the source of contamination in 12 infants, while it remained unknown in the rest of the author's patients. Infants should be separated as early as possible from their tuberculous parents. Although as a rule the prognosis of primary tuberculous infection in infants cannot be definitely stated, it has improved since the discovery of the effective antibiotics, provided that there are no meningitic complications. Early diagnosis is of the utmost importance and may be established only by a subcutaneous tuberculin test or by Vollmer's test. These should be performed routinely in sick infants. After the diagnosis has been made, the infant should receive early and prolonged, simple hygienic and dietetic treatment, for which there is no effective substitute. The infant should also be closely observed, so that complications and acute episodes may be detected in time to institute adequate treatment. Of the 65 infants only 1, aged 20 months, died; this baby had been returned to his family on their request against medical ad-

vice, and death resulted from tuberculous meningitis four months after his discharge. Of the 61 infants treated at a sanatorium, only 13 received streptomycin therapy and only 4 of these were aged less than 6 months. As a rule, the total dose administered in one course of streptomycin therapy was 15 gm. and a second consolidation course was given after an interval of several weeks.

Canadian Medical Association Journal, Montreal

65:181-294 (Sept.) 1951

Treatment of Angina Pectoris. J. H. Palmer.—p. 207.
The General Practitioner and His County Health Unit. L. W. C. Sturgeon.—p. 216.
*Plasma Glutamic Acid Levels in Malignancy. J. R. Beaton, W. J. McGanity and E. W. McHenry.—p. 219.
Obstetrical Problems in General Practice. L. T. Armstrong.—p. 221.
Management of Acute Head Injuries. C. Bertrand.—p. 225.
Bilateral Prefrontal Leucotomy in Mental Illness. J. H. Lindsay.—p. 229.
Study of Prevalence of Diabetes in Ontario Community. A. J. Kenny, A. L. Chute and C. H. Best.—p. 233.
Pernicious Anaemia: I. Maintenance Treatment with Liver Extract. D. G. Cameron, S. R. Townsend and E. S. Mills.—p. 241.
Manifestations of Sarcoidosis. O. D. Beresford.—p. 245.
Laryngeal Paralysis with Review of Its Treatment. G. E. Hodge and A. Grossman.—p. 251.

Plasma Glutamic Acid Levels in Malignant Disease.—Glutamic acid, found in abundance in many proteins, is believed to function via transamination in the interconversion of carbohydrates, fats, and proteins. It has been of interest in connection with malignant disease since Kögl and Erxleben in 1939 first suggested the existence of the unnatural D (=) isomer in cancer tissues. Further, Braunstein and associates demonstrated that transaminase activity is impaired in cancer tissues, and Ballantyne and McHenry reported lowered total concentrations of vitamin B_6, believed to be the coenzyme of transaminase, in malignant tumors. It seemed advisable, therefore, to investigate the plasma concentration of plasma glutamic acid in humans with malignancy. The concentration of this metabolite in normal human subjects had been investigated previously. The general procedure used in the study of normal subjects was followed in 80 patients with malignant growths of the cervix, breast, testes, lung, liver, tongue, cheek, stomach, lip, throat, nose, ovary, and ear. No significant correlation could be found between the type or location of the malignant lesion and the level of plasma glutamic acid for the subject. However, the mean plasma concentration of glutamic acid for the total group with malignant disease was markedly elevated above the normal mean, with only a small overlapping of ranges for normal and malignant groups. The mean plasma glutamic acid concentration in humans with benign growths is not significantly altered from normal. It is suggested that the determination of plasma glutamic acid in subjects with undisclosed types of growths may prove to be a means of distinguishing between benign and malignant growths prior to operation.

Deutsche medizinische Wochenschrift, Stuttgart

76:1165-1196 (Sept. 21) 1951. **Partial Index**

Bronchial Asthma. K. Hansen.—p. 1165.
Excretion of Amino Acids in the Urine Induced by Arsphenamine. G. W. Korting and D. Nitz-Litzow.—p. 1169.
*Experimental Asthma in Man. H. Herxheimer.—p. 1171.

Experimental Asthma in Man.—Mild or moderately severe experimental attacks of asthma were induced and terminated artificially in man in the following manner. A spirometer with a drum for continuous recording of air movements is connected to an oxygen cylinder and a flowmeter that permits oxygen to flow in continuously at the same rate as the oxygen in the spirometer is used up. A side circuit is attached to the inspiratory tube of the spirometer. It leads into an air pump and from there into several glass nebulizers filled with different inhalants that can be used singly and in quick succession. From here the air passes back into the inspiratory tube of the main circuit. If the pinchclip that closes a nebulizer is opened and the pump is switched on, aerosol is emitted into the inspiratory tube and inhaled by the subject. By this method the study of the direct action of asthmagenic substances on the bronchi becomes possible. Depending on the inhaled amount of allergen-aerosol (mixed pollen of various plants, fungi, house dust, and cat and horse hair) typical attacks of bronchial asthma occurred in the subjects. The bronchial reaction is much more reliable for diagnosis and treatment of asthma than the cutaneous reaction. This method reveals whether a certain allergic substance may induce an attack in an asthmatic patient. The attacks of asthma induced by histamine, acetylcholine, and various allergens showed great differences. Massive doses of allergic substances caused hypersensitization, while small doses caused hyposensitization. Bronchial hyposensitization was carried out systematically by gradually increasing the inhaled amount of allergen under continuous control of the bronchial reaction. This method is superior to hyposensitization carried out by injections. The aerosol method may also be used for the study of the mechanics of attacks of asthma and for the prophylactic and therapeutic effects of antiasthmatic substances such as epinephrine, isopropylarterenol hydrochloride, and antihistaminics.

Edinburgh Medical Journal

58:413-456 (Sept.) 1951

Tuberculous Meningitis: Problems in Pathogenesis and Treatment. N. W. Horne.—p. 413.
Case Reports on Glandular Fever. D. B. Peterkin.—p. 430.
Injuries of Female Bladder and Urethra. C. S. Russell.—p. 437.

Irish Journal of Medical Science, Dublin

308:345-392 (Aug.) 1951

Importance of Noradrenaline. J. H. Burn.—p. 345.
Some Clinical and Theoretical Problems of Epilepsy. G. Bennet.—p. 357.
Dietary Factors in Dentistry. W. J. E. Jessop.—p. 366.
Construction of Artificial Vagina. A. B. Clery and E. Solomons.—p. 373.
*Spontaneous Haematomyelia. P. B. B. Gatenby.—p. 377.
Miliary Tuberculosis Complicating Abdominal Pregnancy. A. P. Barry and T. Hanratty.—p. 381.
Implantation of B. Coli into Human Intestine. H. W. Dalton.—p. 384.
Primary Tuberculous Complex in Conjunctiva. P. J. McNicholas.—p. 386.
Temporal Arteritis Complicating Migraine. R. M. Peet.—p. 387.

Spontaneous Hematomyelia.—A boy, 16, experienced a sudden pain in his chest while carrying golf clubs. He felt warm, was unable to walk, and had to be carried. Numbness gradually passed upward. Examination revealed a complete flaccid paraplegia, distended bladder, and a sensory level at the fourth thoracic segment, below which there was loss of sensation to pinprick. A more detailed neurologic examination the next day revealed dissociated anesthesia on the left half of the body below the sensory level. Touch, postural sense, and vibration sense were preserved, with loss of pain and temperature sense. On the right half of the body all forms of sensation were lost. Serologic tests and blood cell counts had been made, and roentgenoscopy of the spine showed no abnormality. Diagnosis of hematomyelia was made, based on the sudden onset of an incomplete cord lesion unaccompanied by constitutional disturbances. The patient died about eight months after the onset of the paraplegia. At necropsy, the spinal cord appeared normal externally, except for slight narrowings in the midthoracic region. Sections were made at many different levels of the cord. Transverse sections at the fourth and fifth thoracic segments showed such disorganization of the cord that the normal anatomy could not be identified. The sensory changes pointed to the destruction of both spinothalamic tracts and the right posterior column, the left posterior column remaining intact. Histologically there was degeneration in both lateral white columns and in both posterior columns; the left posterior column escaped to a greater extent. Taking into account the typical clinical picture and the postmortem finding of numerous large vessels at the level of the lesion, the diagnosis of hematomyelia seems certain, although after eight months there was no longer any evidence of hemorrhage. The mode of death suggested the onset of a further hemorrhage extending upwards in the cord and finally paralyzing respiration. Recently a case of cervical hematomyelia was reported in which the patient was treated successfully by surgical aspiration of blood from the cord. The author feels that the rarity of hemorrhage into the cord is curious, when one considers the frequency of hemorrhage into the brain. Hypertension and arteriosclerosis apparently are not important factors in hematomyelia as they are in cerebral hemorrhage.

Journal of Clinical Pathology, London

4:253-392 (Aug.) 1951. **Partial Index**

*Auto-Antibodies in Acquired Haemolytic Anaemia. J. V. Dacie and G. C. de Gruchy.—p. 253.
*Bleeding Time in Normal and Abnormal Subjects. J. R. O'Brien.—p. 272.
Hyperhaemolysis During Premenstrual Period (Preliminary Report). R. Berlin.—p. 286.
Lupus Erythematosus Cell Inclusion Phenomenon. S. Holman.—p. 290.
Factors Affecting Speed of Agglutination in Coombs Test. I. D. P. Wootton.—p. 296.
Effects of Cortisone on Experimental Glomerulonephritis. G. Teilum, H. C. Engbaek, N. Harboe and M. Simonsen.—p. 301.
Paradoxical Embolism. B. I. Johnson.—p. 316.
Incidence of Penicillin-Resistant Staphylococci in Semi-Closed Community. B. A. Thompson and H. Schwabacher.—p. 350.
Aureomycin Sensitivity of 100 Pathogenic Strains of Staphylococcus Aureus. K. Anderson.—p. 355.

Autoantibodies in Acquired Hemolytic Anemia.—According to Dacie and de Gruchy, cases of hemolytic anemia of spontaneous or endogenous origin may be divided into two broad groups: those determined by a genetic cause resulting in the production of defective red blood cells and those not so determined. Among the latter group of acquired hemolytic anemias are cases in which there is evidence for the presence of antibodies active against the patient's own red blood cells. A series of patients with acquired hemolytic anemia was investigated, with particular reference to the presence in their serums of abnormal antibodies active against red blood cells. Abnormal nonspecific antibodies were demonstrated in 19 patients with idiopathic acquired hemolytic anemia, hemolytic anemia following virus pneumonia, or chronic hemolytic anemia with hemoglobinuria and Raynaud's phenomenon. Trypsinized normal red cells and red cells from patients with paroxysmal nocturnal hemoglobinuria were found to be valuable reagents for the detection of hemolytic antibodies; by their use nonspecific hemolysins of the "warm" or "cold" variety were demonstrated in the serums of 13 of the 19 patients. The variations observed in the antibody patterns in the patients' serums are emphasized, the differences being thought to be reflections of individual responses to the stimuli causing the formation of autoantibodies. Hemolytic antibodies are believed to play a part in the production of hemolysis in vivo, but other types of antibody are probably important in this respect, and the spleen certainly contributes to the hemolytic process in many cases. In three patients of the present series in whom splenectomy was carried out, a pronounced immediate clinical improvement was not accompanied by significant reductions in antibody titer. In these patients, therefore, the spleen seems to have been acting by removing altered or damaged red blood cells, rather than by being an important source of antibody.

Bleeding Time in Normal and Abnormal Subjects.—The bleeding time is the time between the infliction of a small simple cut in the skin and the moment when bleeding stops. It would appear that if a subject bleeds excessively from a small cut, he is likely to bled excessively at operation and conversely that if a subject bleeds normally from one cut he might be expected to bleed normally from another. But in neither case does the corollary always follow. Occasional failures have led to considerable caution in the interpretation of a bleeding time. A further reason for a critical attitude are the comparatively wide and varying limits of normal for this test given in the standard textbooks. Three estimations of the Ivy bleeding time were made on 98 apparently healthy volunteers on two separate occasions. The individual times varied from 0 to more than 15 minutes, while the majority of the recorded times were between 3 to 6 minutes. Two further series by the Duke method (67 subjects) and the ear-saline method (60 subjects) confirmed these results, with only minor differences. A study was made of the results from all the patients with hemorrhagic manifestations referred to the Pathological Department of the Radcliffe Infirmary, Oxford, during the last two years. These results were divided into those from patients with over 100,000 platelets per milliliter of blood and those with gross thrombopenia. The bleeding times of the patients with over 100,000 platelets per milliliter were indistinguishable from those of the normal controls; the majority of the patients with gross thrombopenia had long bleeding times. It is concluded that, except in a few rare diseases, the bleeding time gives no more information than a platelet count. Although the error of any method of counting the platelets is large, the critical level of about 100,000 per milliliter is so far below the normal level—roughly 300,000 by the method used—that confusion is not likely to arise from the inaccuracies of this test. If the platelet count is normal, then it can safely be assumed that the bleeding time also will be "normal"; that is to say, it will fall probably between 2 and 6 minutes, but it may be longer. The only exceptions occur in cases of the rare capillary abnormalities like atrombopenic purpura, the Ehlers-Danlos syndrome, and congenital telangiectasia, in which the platelets are present in normal numbers but the bleeding time may be grossly prolonged if the abnormal capillaries are punctured. As a rule, patients with these syndromes give a characteristic history.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

95:2525-2592 (Sept. 1) 1951. **Partial Index**

Differential Diagnosis of Variola and Varicella. P. B. van Steenis.—p. 2526.
*Cerebellar Apoplexy. W. A. den Hartog Jager.—p. 2533.
Traumatic Intracerebral Frontal Hematoma. G. J. van Hoytema.—p. 2538.
*Unusual Etiology of Anal and Vulvar Pruritus. F. V. B. Dumoulin.—p. 2543.

Cerebellar Apoplexy.—Cerebellar apoplexy is defined by den Hartog Jager as an apparently spontaneous, massive bleeding into the cerebellum. It is only apparently spontaneous, since arteriosclerotic changes of the vessels or hypertension may be causal factors. The clinical picture is not widely known. Eight cases of cerebellar apoplexy were observed at the Neurologic Clinic in Amsterdam from 1935 to 1950. Two of these eight patients were operated on and recovered; four patients died, and two recovered spontaneously. All except the two cases of spontaneous recovery are reviewed. Cerebellar apoplexy may be found in an acute and in a chronic form, both of which are described, with three case reports illustrating each. When cerebellar apoplexy takes a chronic course, symptoms suggesting cerebellar tumor develop. A neurosurgical intervention may prevent a fatal outcome in these cases.

Unusual Etiology of Anal and Vulvar Pruritus.—Dumoulin reports the case of a woman who had paronychia of the right thumb and a pruriginous lesion in the anal and vulvar regions. Since the usual causes of anal and vulvar pruritus (sugar in urine, oxyuriasis, hemorrhoids, fissures, and trichomoniasis) could be ruled out, the combination of paronychia with perianal and vulvar intertriginous dermatitis was diagnosed as a monilial infection. The detection of Candida albicans corroborated this diagnosis. Antimycotic and antipruriginous treatment and the administration of vitamin B complex finally resulted in cure. Reports in the literature suggest that treatment with antibiotics, particularly the oral administration of aureomycin, may produce mucosal changes, especially in the anal and vulvar regions. Questioning of the patient whose case is reported revealed that the pruritus began when she received aureomycin during the treatment of maxillary sinusitis.

Rev. Brasil. Gastroenterologia, Rio de Janeiro

3:395-470 (July-Aug.) 1951. **Partial Index**

Cancer Metastases in Cirrhotic Liver. E. T. Torres.—p. 421.

Cancer Metastases to Cirrhotic Liver.—The occurrence of cancer metastases to cirrhotic liver is rare. The literature contains 13 cases. Torres reviewed 6,356 necropsies that were compiled in 10 years in a department of pathologic anatomy. There were 300 cases of cancer metastases to the liver, only 2 of which were in cirrhotic livers. The metastatic cells were located in the newly formed periportal connective tissue and only occasionally in the lobes of the liver. The rare development of cancer metastases in cirrhotic livers is due to the fact that circulation of a cirrhotic liver is poor and fibroblastic proliferation is an obstacle to the growing of cancer cells. Patients with cirrhosis of liver, when relatively young, do not reach the age of cancer, whereas patients with cancer of the liver do not live long enough to reach the period of the production of cancer metastases.

Revista de Urología, Mexico

9:47-106 (March-April) 1951. **Partial Index**

Statistical Review and Analysis of Results of Transurethral Resection in Cases of Cord Bladder. J. L. Emmett, D. D. Albers and J. de J. Alvarez Ierena.—p. 55.
*Treatment of Prostatic Cancer with Fulminating Pulmonary Metastases. A. C. Drummond.—p. 88.

Treatment of Prostatic Cancer with Fulminating Pulmonary Metastases.—The author performed a transurethral resection of the prostate on a patient, aged 53, for removal of carcinoma. On the 11th day, the patient complained of a pain in the right side of the thorax. Examination showed pallor, slight cyanosis, and shortness of breath. X-ray examination revealed multiple bilateral pulmonary metastases. The patient was given 300 mg. of diethylstilbestrol by injection in 24 hours. Thereafter he was given 150 mg. by injection and 150 mg. orally every 24 hours. His condition improved, and on the 20th day after the operation he was discharged. The dose of diethylstilbestrol was then reduced to 150 mg. a day orally, which was well tolerated and was continued for a year and a half, when x-ray examination showed the lungs to be free from metastases. The patient has regained the weight lost and is now back at work, being maintained with the same daily dose. The efficacy of this treatment was indicated by a decline in the levels of acid phosphatase and alkaline phosphatase. The author believes the case to be no more than arrested. He states that large doses of the estrogen are better tolerated than small ones, and that at least 100 mg. should be given daily, orally or by injection. The drug is tolerated better when it is given shortly before or shortly after meals. The treatment schedule advocated for patients with prostatic cancer and metastatic pain is as follows: (1) 500-1,000 mg. of diethylstilbestrol in divided doses during the first 24 to 36 hours, orally or by injection; (2) 100-300 mg., depending on the severity of the pain, in divided doses daily for five days; (3) 50-100 mg. in divided doses daily, until pain has been relieved and the levels of acid phosphatase and alkaline phosphatase have fallen; and (4) 50-25 mg. indefinitely. Orchidectomy is reserved until the final stage, when it may be performed for relief of pain if needed.

Riforma Medica, Naples

65:737-764 (July 7) 1951

Clinical and Diagnostic Methods in Mediterranean Fever. L. Guiffrè.—p. 737.
Mediterranean Cutaneous Leishmaniasis in Adults. G. Calì.—p. 738.
*Intraperitoneal Use of Curare: Experimental Study. B. Piccoli and A. Ruggiero.—p. 743.
*"Streptomycin-Excitability": Clinical Report of Six Cases. E. Grimaldi.—p. 746.

Intraperitoneal Administration of Curare.—Intraperitoneal administration of curare was tested in eight medium-sized rabbits of approximately the same weight. The drug was administered with the aid of a catheter inserted in a small abdominal incision. The wound was then sutured to permit better evaluation of the action of the drug. Sensitivity to curare varied in each animal. A quantity that was beneficial for some was fatal for others. A dose of 1 or 1.5 mg. proved sufficient to cause muscle relaxation. Larger amounts were tolerated when they were administered in fractional doses. Muscle relaxation appeared 20 minutes after a single moderate dose of curare had been given and lasted one and one-half hours. Thus, it appeared sooner, lasted longer, and was more pronounced than when the drug was given intravenously or intramuscularly. No untoward reactions were observed with these doses, although two rabbits that had received toxic doses of the drug died. Intraperitoneal administration of curare has since been successfully carried out in some human beings undergoing abdominal surgical intervention in the surgical clinic of Catania. It is suggested that this method may become a great aid not only in long surgical interventions requiring muscle relaxation for the entire period of the operation, but also in the immediate postoperative course, because it may eventually prevent muscle contraction and thus spare the patient pain. Intraperitoneal administration may also be indicated for peripheral and balanced anesthesia and become a substitute for intramuscular and intravenous administration of the drug.

Aggravation of Tuberculosis by Streptomycin.—It is known that streptomycin, besides inhibiting the growth of a pathogenic agent, may also cause its resistance to and dependence on the drug. Clinical studies have revealed that in some patients subjected to streptomycin therapy the initial improvement is followed by an aggravation of the symptoms, which disappears as soon as the administration of the antibiotic is discontinued. The author has called this phenomenon "streptomycin excitability." In this paper he reports on six patients out of 200 with tuberculosis of various types treated with streptomycin. The dose varied from 0.50 to 1 gm. daily for a total dose of 30 to 60 gm. Immediate improvement in the general condition was followed by a deterioration, with malaise, increased temperature, cough, and headaches. The roentgenologic examination also revealed aggravation of the pulmonary conditions with local exudative and ulcerative lesions. Administration of the drug was discontinued, and pneumothorax was performed. According to the author, these six patients represent cases of streptomycin excitability because of the initial improvement of the symptoms and the subsequent aggravation. He suggests that the particular sensitivity of bacteria present in the patients, who had never before been treated with streptomycin, may be responsible for this reaction. Also a particular condition of local tissue allergy may be present, so that the quiescent foci become the source from which exudative lesions may originate.

Settimana Medica, Florence

39:259-282 (May 31) 1951

Insufficient Horizontal Tomography in Roentgenologic Study of Pleural Adhesions During Therapeutic Pneumothorax. Q. Fava, D. Capaccioli and C. Tarantelli.—p. 262.
Conservative Treatment of Perirenal Abscesses in Infancy. E. Rezza.—p. 267.
*Clinical Observations on Intramuscular Use of New Strophantus Preparation: Strophosid Combined with Panthesine. L. Corti and B. Greco.—p. 270.

New Strophanthus Preparation.—Thirty-three patients with decompensated heart disease, 6 with hypertension, 9 with sclerosis of the myocardium, and 18 with valvular lesions, were treated with intramuscular administration of strophosid® (a preparation containing a cardioactive glycoside of Strophanthus-Kombé) combined with panthesine® (N-diethyl-leucinol ester of paraaminobenzoic acid). The dose, determined by the type and severity of the lesion, was 0.25 mg. once or twice daily or 0.50 mg. once daily for 15 to 25 days. The total dose administered was greater in patients with hypertensive lesions and sclerosis of the myocardium, less in patients with valvular lesions. Results were good. Best results were obtained in patients who had decompensated heart disease associated with subacute pulmonary congestion due to hypertension, sclerosis of the myocardium, or mitral insufficiency, and in those with increased venous pressure, edema, hepatomegaly, and paroxysmal tachycardia caused by auricular fibrillation. Results were less pronounced if the decompensation was of long duration, if it was associated with renal lesions, and if tachycardia was not present. Diuresis increased, edema disappeared in a few days except in two cases, venous pressure dropped, and dyspnea decreased and sometimes disappeared 24 to 48 hours after institution of the treatment. In 60% of the patients, most of whom had moderate hypotension, the systolic pressure increased; in the remaining 40% it remained unchanged or was lowered. Changes in diastolic pressure were rare. Modifications of the electrocardiographic tracings were comparable to those brought about by digitalis, but they suggested a greater similarity of therapeutic action between digitalis and this preparation than between digitalis and other strophanthin preparations administered intravenously. The drug was well tolerated by most of the patients. In a few the injection was moderately painful and caused local redness. Disturbances of the gastrointestinal apparatus attributable to the drug were not observed in any patient. The therapeutic action of intramuscularly administered strophosid® combined with panthesine® is more pronounced and more permanent than that of other strophanthin preparations administered intravenously. However, it has not been established yet whether these encouraging results are due to the action of the strophosid® itself or to its combination with panthesine.®

BOOK REVIEWS

Diabetes Control. By Edward L. Bortz, M.D., Chief of Medical Service B, Lankenau Hospital, Philadelphia. Cloth. $3.50. Pp. 264, with 16 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1951.

The author, a national authority in the field of medical education, has written for the diabetic patient a volume designed to improve understanding of diabetes and its management. Its outstanding characteristics are its clear and direct exposition, its sound and conservative attitude toward the multiple problems involved in therapeutic methods, its complete coverage of the fundamentals of the disease, and its attractive binding, typography, and illustrations. The book is prepared with great care, both editorially and mechanically. Diagnosis, early recognition, the nature of the disorder, details of diet and insulin use, diabetes in childhood and in pregnancy, and diabetic complications are all discussed simply and effectively. Preventive measures for mouth, skin, and foot disorders are clearly defined. Insurance, employment, and psychological problems, as well as research, summer camps, and other matters of general interest are discussed authoritatively. Above all, the author's cheerful and optimistic philosophy about diabetes colors all information and could not fail to encourage readers of the book. This new guide deserves a high recommendation for study and use by diabetic patients and their families. There are many primers available, but few give such inspiring counsel from both intellectual and spiritual standpoints.

Metabolic Methods: Clinical Procedures in the Study of Metabolic Functions. By C. Frank Consolazio, Chief of Biochemistry, United States Army Medical Nutrition Laboratory, Chicago, Robert E. Johnson, M.D., D.Phil., Professor and Head of Department of Physiology, University of Illinois, Urbana, and Evelyn Marek, M.A., Biochemist, United States Army Medical Nutrition Laboratory, Chicago. Cloth. $6.75. Pp. 471, with 64 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1951.

Detailed directions are given for performing the biochemical, microbiological, and physiological chemical assays required in studies of metabolic function; collecting and storing tissues, food, and body fluids, both in the laboratory (or hospital) and in the field; and carrying out a few additional clinical tests. The methods are those "used routinely . . . long enough to clarify the precautions essential for success."

Large diagrams are used so liberally and directions are so carefully worded and fitted into a uniform outline that a technician with a minimum of training should be able to get adequate results by following the directions in cookbook fashion. Those with more training will appreciate the fact that the material is organized in a way that allows rapid scanning.

There is a full index. Much data and nomograms needed in computing results are included. The printing is good, and the binding strong. Everyone concerned with clinical testing will wish to examine this work.

Operative Surgery. Edited by Sir Lancelot Barrington-Ward, K.C.V.O., Ch.M., F.R.C.S., Surgeon to H. M. King George VI. Second edition. Cloth. $13.50. Pp. 638, with 498 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1951.

Since the first edition of this book was published 11 years ago, many changes have been made in both the articles and the illustrations. The volume represents the experience in practice and teaching of a group of men working together in one hospital, who have had wide experience in different branches of surgery. Although nearly all phases of surgery have been covered, some of the material is not in accordance with certain practices of American surgeons. The important thing, however, is that Mr. Barrington-Ward has presented in a single volume, adequately illustrated, a textbook of operative surgery that will be exceedingly useful to many surgeons. This volume should have an excellent reception.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

Textbook of Obstetrics. By John F. Cunningham, M.D., M.A.O., F.R.C.P.I., Professor of Obstetrics and Gynaecology, University College, (N.U.I.) Dublin. Cloth. $7.50. Pp. 499, with 297 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1951.

The author of this textbook on obstetrics served as the master of the National Maternity Hospital for 10 years prior to his appointment to the chair of obstetrics and gynecology at University College, Dublin. The obstetric teaching embodied in this volume represents the practice at the National Maternity Hospital. Although it was written primarily for medical students, it should find a useful place among practitioners in Ireland. The contents include the anatomy and physiology of the reproductive organs, the diagnosis and management of normal pregnancy, the pathology of pregnancy, labor, and the puerperium, operative obstetrics, and a section on the baby. The text is brief, and there is little or no reference to the literature or the practice in other institutions. Numerous simple illustrations, for the most part original, help to clarify the discussion. Although most of the subjects are treated briefly, the text is sufficiently complete for good student teaching.

The pattern of obstetric practice in Ireland is somewhat different from that of the United States. Yet it is surprising how few basic differences actually exist. The Irish school has been loath to take up spinal anesthesia for delivery, and pubiotomy and symphysiotomy are still accorded a place in operative obstetrics. The uterine douche for hemorrhage is recommended. These criticisms do not detract from the value of the book for student teaching. One desirable feature of this volume is that the methods described and practiced are in accordance with the ethical standards of the Roman Catholic Church and should thus be helpful to physicians of any denomination who practice obstetrics in Catholic hospitals.

An Introduction to Organic Chemistry. By the late Alexander Lowy and Benjamin Harrow. Revised by Benjamin Harrow, Ph.D., Professor of Chemistry, and Percy M. Apfelbaum, Ph.D., Associate Professor of Chemistry, College of City of New York. Seventh edition. Cloth. $5. Pp. 480, with illustrations. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C.2. 1951.

This textbook has the conventional arrangement of topics: the first section deals with the aliphatic compounds, the second with the aromatics, the third with the heterocyclics, and there are several chapters on special topics. Several classes of compounds, such as the carbohydrates, proteins, and amino acids, nucleoproteins, purines, cyanides, and other nitrogen compounds, as well as sulfur, phosphorus, arsenic, and the organometallics are discussed in the section between the aliphatic and aromatic compounds. The special topics section contains brief treatments of such subjects as synthetic polymers, dyes, terpenes, alkaloids, enzymes, vitamins, hormones, and organic nomenclature. Almost all of the chemical reactions given are illustrated by graphic equations. The compounds chosen for synthesis and discussion are usually those which are of practical interest. Numerous cross references are included throughout the text. The appendix includes a glossary, various constants for organic compounds, and sections on reference books and on Latin and Greek roots used in chemical terminology. The index is adequate.

Studio dei gemelli. Di Luigi Gedda. Prefazione del Prof. Cesare Frugoni. Cloth. 15000 lire. Pp. 1381, with 548 illustrations. Edizioni orizzone medico, Rome, 1951.

The problem of twins, as a phenomenon of nature, has attracted the attention of poets, writers, artists, sociologists, geneticists, biologists, anatomists, and pathologists throughout the ages. Although much has been written on the subject, this is the first complete and comprehensive study. Gedda has made use of all available data, including his own personal observations. This book will be of interest to scientists and everyone interested in biological and biopathological problems. It is well written and excellently illustrated.

The Human Colon: An Experimental Study Based on Direct Observation of Four Fistulous Subjects. By William J. Grace, M.D., Assistant Professor of Medicine, Cornell University Medical College, New York, Stewart Wolf, M.D., Associate Professor of Medicine, Cornell University Medical College, and Harold G. Wolff, M.D., Professor of Medicine (Neurology), Cornell University Medical College. Foreword by Alan Gregg, M.D. Cloth. $7.50. Pp. 239, with 112 illustrations. Paul B. Hoeber, Inc. (Medical book department of Harper & Brothers), 49 E. 33d St., New York 16, 1951.

For the first time there are available in book form clinico-experimental observations on the human colon. These able investigators recorded their observations on four patients with colostomy, two for ulcerative colitis, one for a stricture of the rectum presumably associated with lymphogranuloma venereum, and the other, a much older person, for a rectal stricture due to diverticulitis. It is exceedingly interesting that two patients with ulcerative colitis with fistula formation, whose life situations played such an important part in their disease, could be found and compared with two persons whose disease at operation was not necessarily associated with any alterations in their emotional system. The method of study in some instances was interdependent on color technique and changes in the mucous membrane of the exposed ileal or colonic mucosa; in other cases it was dependent on contractility by the balloon method of the intact segment of bowel. The investigators were able to show the range in variability in function of the exposed evaginated loops of bowel in each of the four subjects studied. As was to be expected, in those with ulcerative colitis the color changes were redder, more engorged, and hyperactive for longer periods of time than in the subjects who had fistula for repair of their strictures.

Because of the variability of the response, the authors were unable to find a definite solution to the problem of gastrocolic reflex in their experimental data on human and other subjects. A detailed discussion is given of the personality, background, and reactions of the four fistula subjects as well as the results of experiments to produce altered emotional responses. It was found that the colon participated in the reaction to stressful life situations and, as was to be expected, the two subjects who had ulcerative colitis were found to display more frequent and more sustained hyperfunction than the two subjects without the disease. Although the investigators were unable to attribute ulceration of the colonic mucosa to elevated concentrations of lysozyme in the subjects under observation, they stated that some relationship appears to exist between the concentration of lysozyme in the bowel and the occurrence of ulceration. In other words, they are still vague, as have been many other investigators, about the problem of lysozyme, its source, what it does, and the role it plays in pathologic physiology of the gastrointestinal tract.

In studying vagotomy in ulcerative colitis, the authors found that the behavior of the colon was not altered by the previous vagotomy. In addition, they studied the whole problem of ulcerative colitis in 19 unselected patients and concluded that ulcerative colitis is a stress disorder. They finally arrived at the well-known adage in medicine that a physician who has developed a good physician-patient relationship is for the most part a better physician than the person who has worked primarily in the laboratory and forgotten that there is such a thing as a human being. The authors are to be congratulated for putting their observations in book form. The book as a whole is informative and provocative enough to arouse the scientific curiosity of anyone in the field. Any book that does this is well worth while.

Scoliosis: Pathology, Etiology, and Treatment. By Samuel Kleinberg, M.D., Attending Orthopaedic Surgeon, Hospital for Joint Diseases, New York. Cloth. $7.50. Pp. 286, with 164 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1951.

The author is well qualified to write a book on scoliosis. He has brought this old subject up-to-date in a very readable manner. The theory that the so-called epiphysitis may be a cause of curvature of the spine is presented. The infection theory of this epiphysitis, which probably means a delay in ossification of certain areas of the vertebrae, is questionable. The author does not agree with Lovett's position that rotation-functional scoliosis is always on the concavity of the curve; if it occurs on the convexity, it must be a structural curve. The chapters on conservative therapy are excellent. The chapter on surgery is sound, except for the portion dealing with the use of beef bone. One might suggest that bone from a bone bank would be better.

The statement on page 257 that "the sole purpose of spine fusion is to prevent further increase of deformity" might be questioned. Spine fusion has a further purpose of removing downward pressure on the viscera, thus allowing a better function of the diaphragm and a marked improvement in general health.

The type is clear, and the construction of the book is excellent. The plates and illustrations are excellent, with the exception of a few of the roentgenograms. There is a good, fairly complete bibliography. The subject matter is clearly presented. The book is on the whole excellent and deserves a place in the student's and physician's library.

Encyclopedia of Chemical Technology. Volume 7: Furnaces to Iolite. Edited by Raymond E. Kirk, Head, Department of Chemistry, Polytechnic Institute of Brooklyn, Brooklyn, and Donald F. Othmer, Head, Department of Chemical Engineering, Polytechnic Institute of Brooklyn. Assistant editors: Janet D. Scott and Anthony Standen. Cloth. $25. Pp. 982, with illustrations. Interscience Publishers, Inc., 250 Fifth Ave., New York 1; 2a Southampton Row, London, W.C.1, 1951.

This volume includes many subjects of interest to the physician. Of direct interest are the topics discussed under hemostatics, histamine and antihistamine agents (including a list of commercially available agents), an extremely well-organized 75 page section on hormones divided into subsections (anterior-pituitary hormones, anterior-pituitary-like hormones, posterior pituitary hormones, adrenal cortical hormones, sex hormones, synthetic estrogens, parathyroid hormones, and miscellaneous products), and sections on hypnotics and sedatives, industrial hygiene and toxicology, insulin, and iodine preparations. Other interesting topics are concerned with gas warfare agents (including their physiological properties), gelatin, synthetic gems, glass, glue, glycerol, glycols, glycosides, gums and mucilages, heterocyclics and hydrocarbons (each prefaced by a nomenclature discussion), hydrolysis, hydroquinone, ice cream, insecticides and insecticide repellants, iodine and iodine compounds, hydrogen ion concentration, and indicators. There is no reason to modify the opinions expressed in reviews of the earlier volumes. These are splendid volumes for encyclopedic reference on technical subjects.

Tuberculose im Kindesalter. Von Prof. Dr. O. Görgényi-Göttche, Primarius des staatlichen Kindersanatoriums in Budapest. Cloth. $9. Pp. 338, with 146 illustrations. Springer-Verlag, Mölkerbasteli 5, Wien I, 1951.

Those concerned with tuberculosis of childhood face difficulties without detailed roentgen and phthisiologic evidence; however, even these delineations in the field of pediatrics require certain specializations. Roentgenologists and chest specialists working in the field of tuberculosis of children must be informed of the characteristics of this disease, as it is found in children. This book attempts to clarify the advances in pediatrics in this field. Accordingly, there is a historical review in the first chapter, as well as a statement of the effects of chemotherapy and the consequent alterations. Among the subjects covered by this comprehensive volume are the source of infection, tuberculin diagnosis, the spread of tuberculous infection, activity tests, roentgen diagnosis, bronchoscopy, childhood types, manifestations of first infection, pulmonary changes, endothoracic lymph nodes, pleuritis, meningeal inflammation, phlyctenulosis and scrofulosis, nontuberculous pulmonary disease, prophylaxis, and treatment. The book is well prepared and elucidating, and the illustrations are well chosen. It is recommended to physicians conversant with German, as a good text on childhood tuberculosis.

Aids to Anatomy (Pocket Anatomy). By R. J. Last, M.B., B.S., F.R.C.S., Professor of Applied Anatomy, Royal College of Surgeons of England, London. Eleventh edition. Cloth. $2.25. Pp. 379, with 60 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2; Baillière, Tindall & Cox, 7-8 Henrietta St., Covent Garden, London, W.C.2, 1951.

This pocket-sized book presents the salient features of the human anatomy in outline form. It is intended for use in conjunction with the larger textbooks and should be of particular value for purposes of rapid orientation and review. Birmingham revision terminology is used throughout.

QUERIES AND MINOR NOTES

NOSE DROPS

TO THE EDITOR:—*Please tell me about "nose drops." There seems to be some disagreement about their value and whether they damage the glands and cilia of the mucous membranes.*

M.D., Massachusetts.

ANSWER.—Although nasal vasoconstrictors are not curative, they provide symptomatic relief and are among the more important drugs available to physicians for use in the nasal cavity on a rational, physiologic basis. Ephedrine is the most widely used. Its successful application has led to the synthesis of other nasal vasoconstrictors, some more potent and others less so than ephedrine.

Nasal vasoconstrictors serve several useful purposes. They provide temporary relief from the discomfiture of intranasal obstruction, improve nasal ventilation, frequently promote adequate drainage from infected paranasal sinuses by opening obstructed ostia, make the nasal cavity more visible for inspection, and diminish mild nasal epistaxis. Nontoxic nasal vasoconstrictors that are compatible with ciliary motility, that do not vary greatly in their hydrogen ion concentration from that of normal nasal secretions (pH 5.5 to 6.5), and that are nontraumatizing to the mucous membranes are most useful in the treatment of the nasal cavity and the paranasal sinuses and should be selected for these cardinal attributes.

Excessive and careless use of sympathomimetic amines for prolonged periods may lead to a clinical syndrome in which the dominant complaint is nasal stuffiness. Fortunately, nasal sensitivity to vasoconstrictors can be rapidly checked by discontinuing the medicament. Therapeutic nihilism with regard to nose drops is as bad as overtreatment. Much depends on the ability of the physician to guide his patients in the proper use and selection of nasal medicaments.

Among the more satisfactory nasal vasoconstrictors for clinical use are ephedrine hydrochloride in isotonic sodium chloride in 0.25%, 0.5%, or 1% solution; ephedrine sulfate in sodium chloride in 0.25%, 0.5%, or 1% solution; phenylephrine hydrochloride (neo-synephrine®) in 0.25% or 0.5% solution; hydroxyamphetamine (paredrine®) hydrobromide in 0.25%, 0.5%, or 1% solution, and phenylpropanolamine (propadrin®) hydrochloride in 1% solution.

FLUORIDES IN TABLE SALT

TO THE EDITOR.—*Would it not be less wasteful to put fluorine in minute amounts in our table salt, as has been done with iodine, than to put it in the water supply? Such a small quantity of the water in the mains ever reaches a person's digestive tract, but most of the salt in salt shakers eventually does.*

Z. F. Endress, M.D., Pontiac, Mich.

ANSWER.—Caries inhibition by fluoride (about 1 ppm of fluorine) in drinking water has been studied in great detail. No comparable information is available for judging the effect of fluoride added to table salt. The known variations in the consumption of salt by different persons suggests that the latter procedure would not be satisfactory. Furthermore, many drinking waters naturally contain adequate fluoride, and the use of a fluoridized salt would be undesirable in these cases. It is more logical to add iodine to salt, because iodides have a much wider margin of safety than do fluorides. The wastefulness of adding fluoride to a water supply is more apparent than real. The added materials are readily available and inexpensive, and also the labor involved in a carefully controlled program is negligible when computed in terms of the individual child.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

BITTER TASTE FOLLOWING GASTRECTOMY

TO THE EDITOR:—*A man 65 underwent a subtotal gastrectomy for recurrent bleeding of a duodenal ulcer. Since the operation he has complained of a constant bitter taste in the mouth that disturbs him greatly. The only therapy that ameliorates this symptom somewhat is the use of chewing gum or candy drops. He is not anemic, does not vomit or have diarrhea. What do you advise?*

M.D., Pennsylvania.

ANSWER.—The symptom of bitter taste in the mouth caused by subtotal gastrectomy must be rare, since such authorities as Bockus, Portis, and Eusterman do not even mention it as a sequel of the operation in their texts. In addition, the literature fails to reveal any consistent association of this symptom with subtotal gastrectomy. Therefore, other causes must be considered. These may be (1) possible biliary regurgitation, owing to the dilated afferent loop opening into the stomach and regurgitating into the esophagus; (2) galvanism, which may be a factor where the patient has two different kinds of metal filling the teeth; (3) gingival abnormalities; (4) exposure to metallic materials; and (5) cerebral arteriosclerosis.

The last condition is probably the most frequent and, unfortunately, does not respond to therapy. Such empirical measures as nicotinic acid, papaverine, and aminophylline may be tried. Occasionally, patients who have undergone subtotal gastrectomy respond to dilute hydrochloric acid given one half hour and one hour after meals.

It is difficult to explain the relief obtained by the chewing of gum and sucking of candy drops. However, there is no specific contraindication for their use, except that patients who have had a peptic ulcer and have intact vagi should not have free sugar in their diet for a long time. It may be that if free sugar is omitted there will be some improvement in the patient's clinical picture.

HALITOSIS FOR TEN YEARS

TO THE EDITOR:—*A 33 year old single woman has had foul breath for 10 years. She states it is worse in the mornings, and worse with excitement or anger. There is no cough, or expectoration. She dates the onset of this trouble from the time of her father's death in an accident. Two years ago the patient was engaged to be married, but her fiancé married another girl. Since then the annoyance with the malodorous breath is much worse, and the patient fears she will lose her job because of it. The patient is always in a state of agitated depression, crying, and reiterating her unhappiness. Results of physical examination are negative except for pale boggy turbinates, mucoid pharyngeal discharge, and mild spasm of the large bowel. A tonsillectomy was done eight months ago, without relief. Since then the patient has had a postnasal drip with intermittent secondary infection, usually mild. The following studies have not disclosed abnormalities: (1) blood cell count and urinalysis, (2) nasal smear for eosinophils, (3) x-rays of the sinuses, (4) chest x-ray, and (5) complete dental x-ray (the dentist said that dental hygiene is unusually good), and (6) gallbladder dye studies. This patient has not been helped by intensive antibiotic and antihistaminic therapy. With psychotherapy the patient's mental state is improving. Can you suggest any further diagnostic attempts and therapy?*

David Lee, M.D., Los Angeles.

ANSWER.—Among the causes of halitosis are paranasal sinus infection, bronchial infection, smoking, colitis due to faulty fat metabolism, gastritis, esophageal diverticulum, chronically diseased tonsils, atrophic rhinitis, dental decay, low-grade infections of the gingiva, and accumulation of meat fibers between the teeth. From the history and findings presented, there is little doubt that the psychogenic component is a major factor in the patient's difficulty. Psychotherapy should be continued. Displacement therapy is suggested as a means of combating the postnasal drip.

LINOLEIC ACID IN ECZEMA

To the Editor:—*Months ago I read a report of favorable results obtained in the treatment of eczema of infants by administration of linoleic acid. May I expect any results from this therapy in an adult? What doses would you suggest, and should it be used only by mouth or also locally (ointments)? Where and how is it possible to get linoleic acid?*

Mario E. Milite, M.D., New York.

Answer.—Although it is known that a scaling dermatitis can be produced in animals by a diet deficient in unsaturated fatty acids (Burr, G. O., and Burr, M. M.: *Biol. Chem.* **82:**345, 1929), there is little evidence to support the idea that any dermatosis in man is due to such deficiencies. Treatment of eczema with linoleic acid or any of the unsaturated fatty acids given orally is of questionable or no value (Epstein, N. N., and Glick, D.: *Arch. Dermat. & Syph.* **35:**427, 1937; Taub, S. J., and Zakon, S. J.: *J. A. M. A.* **105:**1675 [Nov. 23] 1935). There are a few advocates of unsaturated fatty acid therapy in infantile eczema (Finnerud, C. W.; Kesler, R. L., and Wiese, H. F.: *Arch. Dermat. & Syph.* **44:**849, 1941; Hansen, A. E., and others: *Am. J. Dis. Child.* **73:**1, 1947); Hansen adds that this therapy is of negligible value in adult eczema.

Local use of unsaturated fatty acids in atopic dermatitis appears to give the same results as bland indifferent ointments.

Unsaturated fatty acids, including linoleic acid, are present in vegetable oils, such as soy bean and corn oil, and also in lard.

ACNE VULGARIS

To the Editor:—*What is the primary cause of acne vulgaris? Is there a difference in racial susceptibility? Is there a correlation with occupation, e. g., farm workers as compared with industrial workers? Are geographical and climactic factors important?* *Jean Thompson Munzer, M.D., New York.*

Answer.—There is considerable evidence to indicate that estrogen-androgen imbalance is a major, if not the primary, cause of acne vulgaris. Foods rich in iodine or fat and hot and spicy foods play a contributory role, in that they irritate or overactivate the sebaceous apparatus. In some persons, racial susceptibility plays a part; inherently large and overactive sebaceous glands are prone to develop acne. The application of grease or oils to an already oily skin may produce acne by mechanical plugging of pores. Thus certain machine workers and garage workers are more likely to have acne than are farmers. Climatic conditions also play some role, for it has always been noted that a sunny, dry climate is better for the patient with acne than is humid weather which activates the sebaceous apparatus. These are only a few of the many factors which influence acne, a complex and challenging condition.

LUPUS ERYTHEMATOSUS

To the Editor:—*Have any cases of discoid lupus erythematosus developing from the inspection of television tubes been reported? A 20-year-old woman, wearing plastic glasses to protect her eyes from explosion, has a small patch of typical lupus erythematosus over the right cheek, at the outside edge of the glasses and on exposed skin. Contact dermatitis has been eliminated. She also inspects radio tubes. The inspection, of course, is with the tubes lit. This work has been going on for 16 months, and the eruption is now of two months' duration. Inspection is at close range. Fluorescent lights are overhead.* *M.D., New York.*

Answer.—It has long been known that ultraviolet rays may affect lupus erythematosus adversely. It has not been established, however, that such rays produce the disease, nor have other rays, such as x-rays or infrared rays, been causative. Neither radio tubes nor television tubes give off ultraviolet rays, so that they probably cannot be considered to produce or affect lupus erythematosus. Fluorescent lights, it is said, do produce some ultraviolet rays, but during the years they have been in use there have been no reports to suggest their association with discoid lupus erythematosus.

TESTS FOR CORONARY INSUFFICIENCY

To the Editor:—*In the Sept. 1, 1951, issue of* The Journal, *in Queries and Minor Notes, a doctor asked about the relative merits of the Levy and Master tests for coronary insufficiency. Your discussion of the merits of both tests with an understanding of the dangers involved was warranted.*

The frequency of false negative reactions, as well as the dangers involved in the use of the Levy anoxemia and exercise tests, has prompted the consideration of other tests. I would like to call attention to a test that has been in use for six years. By the intravenous injection of ergonovine maleate, the clinical and electrocardiographic picture of coronary insufficiency is produced (Stein, I.: Observation on the Action of Ergonovine on the Coronary Circulation: Its Use in the Diagnosis of Coronary Artery Insufficiency, Am. Heart. J. **37:**36, 1949; *Stein, I., and Weinstein, J.: Further Studies of the Effect of Ergonovine on the Coronary Circulation,* J. Lab. & Clin. Med. **36:**66, 1950; *and The Ergonovine Test in the Diagnosis of Coronary Insufficiency Due to Hyperthyroidism,* New York State J. Med. **50:**24 [Dec. 15] 1950).

While the Levy anoxemia test produces an anoxia of the myocardium and the exercise test increases the work load of the heart, the ergonovine test apparently depends on a local vasospastic action on the coronary blood vessels. Therefore, safeguards against the dangers encountered in the anoxia and exercises tests can be more effectively employed in the ergonovine test. We performed over 300 tests, and no toxic effects were observed.

Our use of ergonovine did not produce the ill-effects reported by Scherf and Schlachman (Electrocardiographic and Clinical Studies on the Action of Ergotamine Tartrate and Dihydro-Ergotamine 45, Am. J. M. Sc. **216:**673, 1948) *who used ergotamine tartrate, related to, but not identical with, ergonovine maleate.*

The ergonovine test is more sensitive than either of the other two. In no instance have we observed a false positive reaction. It is felt, however, that the three tests have a place in investigations of this type.

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REACTIONS TO PENICILLIN

To the Editor:—*In the answer to the question "Are sensitivity reactions more common following orally administered or parenterally administered Penicillin?" in Queries and Minor Notes, Sept. 8, 1951, the consultant mentions that orally administered penicillin was given to some 500 patients and that only one hypersensitivity reaction was seen. He then adds, "There have been seen no fevers or other sensitivity reactions with orally administered penicillin."*

In 1948, I reported in the "Letters of the International Correspondence Club of Allergy" a case of generalized urticaria and fever of four days' duration in a physician who, for prophylactic reasons, had taken penicillin orally for two days. He had had minor surgery 10 days prior to the onset of the hypersensitivity reaction. Since then there have been additional reports in the literature of urticarial eruption following orally administered penicillin.

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RECURRENT DEPRESSIONS

To the Editor:—*I am an interested reader of your department of Queries and Minor Notes. I read them all, not just the orthopedic part. In* The Journal *of Oct. 20, 1951 (page 798), a physician from Missouri asks about recurrent depressions. After reading this question and the answer, I wonder whether the inquirer and the consultant would not both profit by reading Walter C. Alvarez' article entitled "Small, Commonly Unrecognized Strokes"* (Postgrad. Med. **4:**96 [Aug.] 1948).

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